

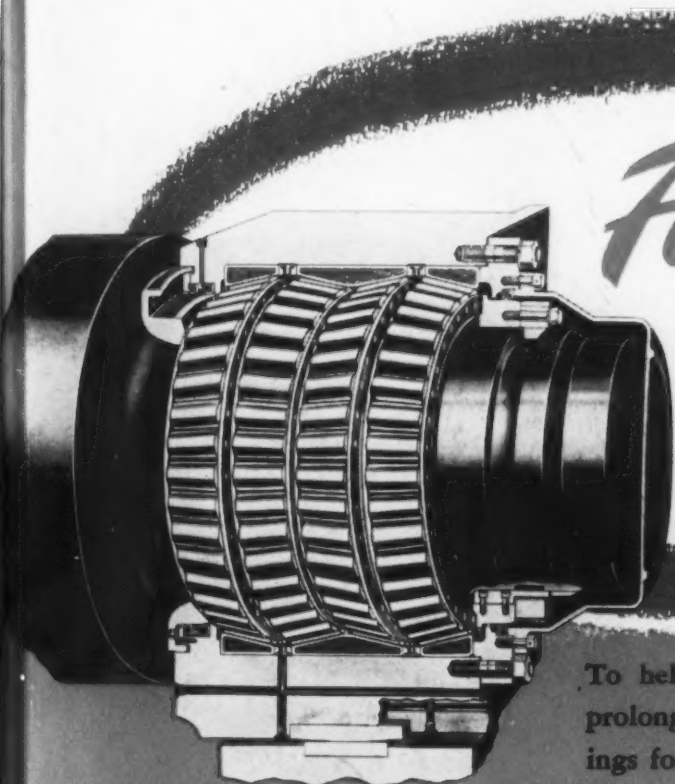
# THE IRON AGE

THE NATIONAL METALWORKING WEEKLY

January 12, 1950

EAST ENGINEERING  
LIBRARY

JAN 12 1950



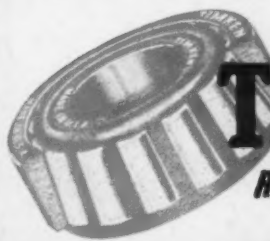
*For* **BIGGER,  
STRONGER,  
ROLL NECKS**

To help give your rolling mills maximum rigidity and prolong roll life, specify Timken Balanced Proportion bearings for all back-up and work rolls.

Timken Balanced Proportion bearings now make possible bigger, stronger mill roll necks in addition to all of the other well-known advantages of tapered roller bearings namely: elimination of friction; simplicity and ease of lubrication (no pipes, pumps, etc.); radial, thrust and combined load capacity (no special thrust bearings needed); ease of roll changing; restarting of mill after stops without relieving roll pressure and loss of steel.

Timken roll neck bearings are made of Timken special alloy steel with case-hardened contact surfaces and tough inner core for maximum resistance to wear, loads and shock. Applicable to existing and new mills. Consult our roll neck bearing specialists for specific information.

THE TIMKEN ROLLER BEARING COMPANY  
CANTON 6, OHIO  
Cable Address "TIMROSCO"



**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
**ROLL NECK BEARINGS**

**B**Y providing adequate lubrication for blast furnaces, Farval helps pig iron production. It also eliminates one of industry's most hazardous jobs.

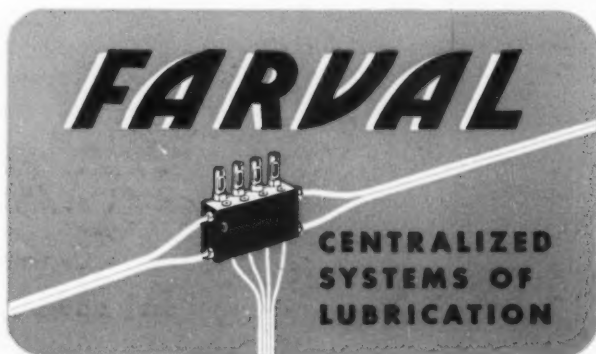
Oiling the furnace top used to take 30 minutes of three men's time. Two men made the dangerous, daily climb—one greasing the bearings, one watching for gas fumes, ready to signal for help to a third man waiting below. Climbing around on walkways and girders, 175 feet in the air, was extra hazardous in high winds or on icy winter days. No wonder that important bearings were slighted or skipped, with resultant damage to equipment and delays to production.

With Farval, one man quickly lubricates *all* bearings on the rotary distributor, bell beams, skip hoist, sheaves, etc., from a safe central pumping station in the Hoist House. Annual savings in oiling time and lubricants alone exceed \$2500 per furnace on an installation serving 250 bearings. Even more important is the fact that regardless of the condition of the furnace or the weather, all bearings receive positive lubrication at regular intervals, and risk to human life is eliminated.

Since the first installation on a blast furnace in 1930, over fifty furnaces have been Farval equipped. Farval centralized systems also protect over a million industrial bearings—on stock bins, overhead cranes, rolling mills, presses, conveyors, in fact machines and equipment of every kind where adequate lubrication is important to efficient, economical production.

Farval is the Dualine System with the Positive Piston Displacement Valve. This valve has but two moving parts and is fully adjustable, with a Tell-tale indicator at each bearing to show the job is done. For a full description of Farval, write for Bulletin 25, The Farval Corporation, 3252 East 80th Street, Cleveland 4, Ohio.

*Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.*



## Adequately lubricated at 20° below



**FARVAL—Studies in  
Centralized Lubrication  
No. 82**



# New Bank Building Rises on Tulsa Skyline



Tulsa's new 20-story First National Building promises to be one of the city's most impressive structures. It is to contain shops on the street level, a spacious lobby, a mezzanine, four stories devoted to banking facilities, fifteen stories of office space, and a penthouse. It will have eight elevators, and its escalators will be capable of handling up to 5000 people per hour.

The air-conditioned structure occupies a 100 ft x 140 ft corner plot and contains both a basement and sub-basement. The first-floor interior columns are to be covered with stainless steel. The second story will be faced with fixed glass and Georgian marble, and gray glazed brick, with marble trim, will be used for the remainder of the building.

Construction of Tulsa's attractive First National Building called for the fabrication and erection of 2889 tons of steel, all of which was handled by Bethlehem.

Architects: Carson & Lundin, New York.

Consulting Engineers: Edwards & Hjorth, New York.

General Contractor: Manhattan Construction Co., Muskogee, Okla.

Owner's Representative: John W. Harris Associates, Inc., New York.

**BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.**

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation  
Export Distributor: Bethlehem Steel Export Corporation

## FABRICATED STEEL CONSTRUCTION



January 12, 1950

## BUSINESS STAFF

GEORGE T. HOOK  
Publisher

B. H. Hayes  
Production Manager

O. L. Johnson  
Director of Research

Charles T. Post  
Manager Circulation and Reader Service

J. R. Hight  
Promotion Manager

Executive Offices  
Chestnut and 56th Sts.  
Philadelphia 39, Pa., U.S.A.  
Editorial and Advertising Offices  
100 E. 42nd St., New York 17, N.Y., U.S.A.

### Regional Business Managers

B. L. Herman Peirce Lewis  
Philadelphia 39 Detroit 2  
Chilton Bldg. 103 Pallister Ave.

C. H. Ober Robert F. Blair  
H. E. Leonard Cleveland 14  
New York 17 1016 National City  
100 E. 42nd St. Bank Bldg.

Stanley J. Smith J. M. Spackman  
Chicago 3 Pittsburgh 22  
1134 Otis Bldg. 814 Park Bldg.

Paul Bachman R. Raymond Kay  
West Hartford 7 Los Angeles 28  
62 LaSalle Rd. 2420 Cheremoya Ave.

Circulation Representatives  
THOMAS SCOTT  
JAMES RICHARDSON

One of the Publications  
Owned and Published by  
CHILTON COMPANY  
(Incorporated)

### OFFICERS AND DIRECTORS

JOS. S. HILDRETH, President

EVERIT B. TERHUNE Vice-President  
P. M. FAHRENDORF Vice-President  
G. C. BUZBY Vice-President

WILLIAM H. VALLAR, Treasurer

JOHN BLAIR MOFFETT, Secretary

HARRY V. DUFFY D. ALLYN GARBER  
GEORGE T. HOOK MAURICE E. COX  
GEORGE MAISWINKLE, Asst. Treas.

Member, Audit Bureau of Circulations



Cable Address "Ironage" N. Y.

Copyright, 1950, by Chilton Company (Inc.)

## Editorial

Wanted: Fast Talkers ..... 7

## News Interpretations

Newsfront ..... 11  
The Iron Age Summary ..... 15  
Global Letter ..... 26  
Machine Tool Highspots ..... 30  
On the Assembly Line ..... 38  
West Coast Progress Report ..... 42  
The Federal View ..... 46

## Special Features

Fatigue Cracks ..... 18  
Iron Age Introduces ..... 20  
Free Publications ..... 32  
New Production Ideas ..... 33  
The Economic Side, J. S. Lawrence ..... 76  
Dear Customer ..... 102  
Dear Editor ..... 108  
The Clearing House ..... 114

## Technical Articles

Blanking Sheet Metal Parts with Steel Cutting Rules.. 51  
Fork-Ram Truck Speeds Wire Handling ..... 54  
Metallizing for Corrosion Prevention ..... 55  
Reducing Handling Time in Jig and Fixture Setups.. 61  
Quench Cracking Factors ..... 64

## Spot News of Industry

Truck Freight Rates to Advance 15 Pct. .... 69  
Coal Operators Fight for Their Industry..... 71  
Industrial Shorts ..... 72  
British Bid for Canadian Steel Markets..... 73  
Dates to Remember ..... 73  
Stainless Steel Sales Outlook Good..... 77

## Markets & Prices

Market Briefs and Bulletins ..... 79  
Nonferrous Metals Outlook ..... 80  
Nonferrous Prices ..... 81  
Iron and Steel Scrap Market ..... 82  
Iron and Steel Scrap Prices ..... 84  
Comparison of Prices ..... 86  
Steel Prices ..... 88  
Miscellaneous Steel Prices ..... 90  
Stainless Steel, Pipe and Tubing Prices ..... 91  
Warehouse Steel and Pig Iron Prices ..... 92  
Ferroalloy Prices ..... 93

Index to Advertisers ..... 124

# THE IRON AGE

## Special Articles



Low cost blanking of aluminum, magnesium, and stainless steel sheet metal shapes through use of the dinking die, a steel cutting rule such as used in the printing trade, is described in "Blanking Sheet Metal Parts With Steel Cutting Rules," starting on p. 51. "Metalizing for Corrosion Prevention," p. 55, discusses the characteristics of zinc and aluminum sprayed coatings and cites examples of the use of these coats on specific products.

## Issue Highlights



Truck rates on steel shipments will be advanced by an average of 15 pct within the next 6 weeks. The new tariffs will still be about 10 pct under rail rates but they are bound to increase emphasis on buying from the nearest mill. Some "depressed" rates will go up as much as 26 pct.—p. 69.



In a world of booming television sales, building curtain walls, and stainless coal conveyer belts, the stainless steel sales outlook for 1950 is bright. Bulk of the former heavy tonnage users are now buying again and as usual, there are new fields to cultivate.—p. 77.



Coal operators have discarded pussyfooting diplomacy in their struggle with John L. Lewis for control of the industry. The fight is not going according to script at the moment but since Lewis is not a man who can be sold short the battle may yet wind up in his favor.—p. 71.

United Kingdom steel producers claim they are making inroads into the Canadian market at the expense of United States mills. The 1950 target is 200,000 tons, against a postwar average of 70,000 tons a year.—p. 73.

## Coming Next Week



Detailed information on the forging and welding of titanium, now available from research and development work on this metal conducted at the G. E. Thomson Laboratory, is presented in an article appearing next week. Various forming operations, and inert-arc and resistance welding are covered. Some typical welding constants and notes covering the metallography of titanium are also included.

## EDITORIAL STAFF

TOM C. CAMPBELL  
Editor

W. A. Phair  
Managing Editor

I. E. Lloyd Machinery Editor	G. F. Sullivan Markets Editor
D. I. Brown Metallurgical Editor	W. V. Packard News Editor
W. I. Van der Poel, Jr. Art Editor	F. J. Winters Associate Editor
H. W. Van Camp Associate Editor	A. O. Moelk Assistant Editor
S. Baur Assistant Editor	W. Czygan Assistant Editor

## Regional Editors

G. F. Elwers Chicago 3 1134 Otis Bldg.	John B. Delaney Pittsburgh 22 814 Park Bldg.
John Anthony Philadelphia 39 Chilton Bldg.	W. A. Lloyd Cleveland 14 629 Euclid Ave.
W. G. Patton Detroit 2 103 Pallister Ave.	Osgood Murdock R. T. Reinhardt San Francisco 3 1355 Market St.

Eugene J. Hardy

Karl Rannels

George H. Baker

Washington 4  
National Press Bldg.

## Correspondents

J. S. Lawrence New York	N. Levenson Boston
John C. McCune Birmingham	Roy Edmonds St. Louis
James Douglas Seattle	Herbert G. Klein Los Angeles
F. H. Harley London	F. Sanderson Toronto
Pierre Benoit Paris	R. G. Walker Rio de Janeiro

Chilton Editorial Board  
PAUL WOOTON  
Washington Representative

Indexed in the Industrial Arts Index and the Engineering Index. Published every Thursday by the CHILTON CO. (INC.), Chestnut and 56th Sts., Philadelphia 39, Pa. Entered as second class matter Nov. 8, 1932, at the Post Office at Philadelphia under act of March 3, 1879. \$8 yearly in United States, its territories and Canada; other Western Hemisphere Countries \$15; other Foreign Countries \$25 per year. Single Copies 35¢. Annual Review Number, \$2.00.



# COLD ROLLED STRIP

## HEAVY GAGES

High finishes in gages 0.010" to  
0.500" — widths ½" to 18" —  
carbon to S.A.E. 1080.

## BETTER FORMABILITY

Special patented annealing  
process imparts quality that is  
unexcelled for drawing, stamping  
and severe forming.

## BLAIR STRIP STEEL CO.

MANUFACTURERS OF  
HIGH GRADE COLD ROLLED STEEL

NEW CASTLE, PA.



SPECIALISTS  
IN  
CARBON CONTROL

## SERVICE BY FLEXIBILITY

Direct personal contact with the  
plant and flexible operations at  
the plant insure fast delivery  
and attention to individual  
requirements.

# Editorial

---

INDUSTRY VIEWPOINTS

---

## Wanted: Fast Talkers

**M**AKE no mistake about it businessmen will do a lot of defending in the next few years. Maybe they think the color of their pajamas is their own personal affair. It is. But what they do in a business way—if it affects the public—is not their personal affair any more.

Even though they are sure they know what they are doing. Know that their action is right. Know that it is for the best interest of the workers, the company and the stockholders. They must broadcast.

Nothing succeeds like frankness. Double talk or faint heart talk is no good at all. No one believes it. No one is being fooled by it. But when a businessman comes out and tells what, why and how, he already has a beat on the people who are doing their best to break the backbone of free business.

But believing and explaining are two different things. This is no time to stutter. It is no time to stammer. It is no time to take that superior—how dare you—attitude. People understand partly by reading expressions as well as by listening. They also understand better by getting two-cent and five-cent words instead of gobbledegook.

So a businessman does raise his prices. Let him broadcast it. Why he did it. How he did it. And in simple language. So he puts in a new machine. Let him advertise it to his employees; not on the basis of machines v. men but on the basis that it means more products at a lower price, more profit, better wages and more work for everyone.

When businessmen talk in public they should say something. They should talk more. If they are afraid they will be bested by smooth arguments from the other side there is a remedy. It is hard to take but it is good.

Study your own style of facial expressions. Study your voice and mode of talking. You aren't a stuffed shirt. But maybe you look or talk like one. If that's true few will listen. But if you act and sound like you honestly and really believe what you are saying you have won an audience. And if you have won an audience you are getting your point across.

If the other side—on which there are plenty these days—talks fast, you talk fast. But to do this you have to know the answers. And you have to get them out fast.

It will never do business and free enterprise any good to have its speakers give vague negative statements. Better to say nothing than to keep up that chatter.

You have a good thing to fight for, to talk about and to sell. But you will have a harder job selling it in the 50's than ever before. But it can be done.

*Tom C. Campbell*

Editor



# ARC-WELDING **FREE**

**FIRST**

sample our improved  
Class E-6010 electrode



G.E.'s NEW W-22 ELECTRODE (AWS Class E6010) is a reverse polarity d-c rod that produces high-quality welds in *all* positions. Its steady, spray-type arc is easily controlled . . . with little spatter, and excellent penetration.

This electrode is ideal for vertical and overhead welding jobs where welds of excellent appearance, high tensile strength, high ductility, and good impact resistance are particularly important.

The new W-22 has already proved itself in production tests . . . such as that at the Vulcan Steel Tank Company at Tulsa, where it was used in welding tank heads or end covers 36" in diameter and  $\frac{1}{4}$ " thick. Note the good fusion and excellent appearance of the finished welds. Their Welding Superintendent reports this electrode has the most forceful yet easily controlled arc he has ever seen.

*You can put your confidence in*

**GENERAL  ELECTRIC**

712-1



# NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► The tremendous growth of television is providing a nice market for some metal specialty companies, such as those which spin metal video tube cones. One such producer expects to hit a monthly output rate of 100,000 units in January.

► Greece may build a semi-integrated steel mill. Several companies there are planning to cooperate on building of a small steel plant, with a 25 metric ton openhearth, to make sheets and shapes. The plant would be located near Athens. Plans also include construction of a dock and unloading facilities.

► Canadian steel price increases are in the wind. They are expected to follow the U. S. pattern, averaging about 4 pct. This, with higher prices for U. S. made steel and the effects of devaluation, will add about \$27 million to the annual Canadian steel bill at current rates.

► Torsoelastic rubber springs are being applied where they count most to the driver of agricultural machinery. One recent application uses the springs to cushion tractor seats. A layer of rubber is sandwiched between metal plates, with the rubber fastened to the plates by a special brass plating process.

► Lightweight infra-red weld zone preheaters that cut welding time and are said to insure crackproof welds have been developed by the Navy. The method uses a wound resistor element as a radiation source and is reported to take one-twentieth the time formerly required for heating. Leech magnets attach it to the surface to be heated.

► The sticker on estimates of a surplus of 8 million tons of steel in Europe by 1953 is not in the surplus itself: The United States would up booming 1948 with just about 8 million tons more capacity than production. Danger lies in construction of plants where they don't belong, followed by tariff walls to protect them.

► A thickness gage using radioactive isotopes is now being marketed for measurement of coating thicknesses on such products as tinplate, porcelain enamel, paint or lacquer on metal surfaces and for platings such as chromium. Though accuracy varies with the application, inherent accuracy is said to be plus or minus 0.05 pct of sample thickness or plus or minus 0.01 mg/cm<sup>2</sup>, whichever is larger.

► Two high strength magnesium alloy systems are now under study with compression and tensile yield strengths in excess of 40,000 psi, and with ultimate strengths of more than 50,000 psi. One is the Mg-Zn-Zr system, the other uses Al-Mg-Zn-Mn. The same Air Force source also indicates development of a feasible method of atomizing magnesium alloys, and reports that extrusions of powder without surface blistering have been accomplished.

► The Air Force and the Navy intend to replace ultraviolet instrument lighting systems in aircraft with red lighting in a fixture mounted on the face of the instrument and held in place by the instrument mounting screws.

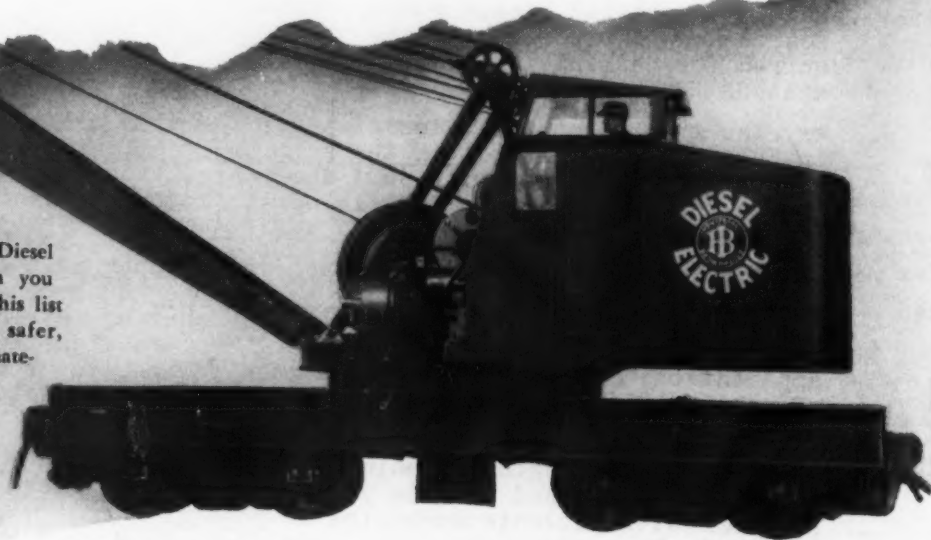
► The average age of passenger cars on the road is coming down slowly but it is still far above the prewar figure. Statisticians estimate that average age now is 8.4 years compared to 8.8 a year ago. In 1941 the figure was 5½ years.

*Check this list of Brownhoist features... when you're thinking of a diesel electric locomotive-crane*

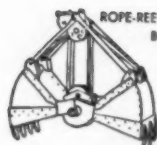
- (✓) Travel power applied direct to axles by 2 oversize inside hung spring-mounted motors
- (✓) Motor current supplied from generator direct connected to Diesel engine
- (✓) Travel speeds up to 15 MPH. for heavy duty switching service
- (✓) Helical gear reducer transmits power for hoist drums, swing, and boom
- (✓) Double disc roller bearing mounted rotating clutches
- (✓) Electric swing available at extra cost
- (✓) Cast steel rotating bed insures rigidity and permanent alignment of machinery
- (✓) Monitor-type cab provides 360° visibility
- (✓) 14" safety clearance between car body and rotating bed
- (✓) Roller bearings at all essential points

CAPACITIES 30 TONS AND UP

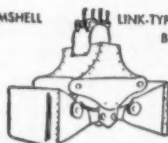
Only in the new Brownhoist Diesel Electric Locomotive-Crane can you check affirmative throughout this list of features that mean faster, safer, easier and more economical materials handling and car switching. Why accept less when it costs no more! Be sure you get the *best* when you invest.



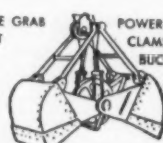
**BROWNHOIST BUILDS BETTER CRANES**



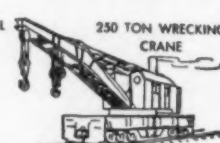
ROPE-REEVE CLAMSHELL BUCKET



LINK-TYPE ORE GRAB BUCKET



POWER-WHEEL CLAMSHELL BUCKET



250 TON WRECKING CRANE



COAL BRIDGE

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICH. • DISTRICT OFFICES: NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO • AGENCIES: DETROIT, BIRMINGHAM, HOUSTON, LOS ANGELES, PORTLAND, SAN FRANCISCO, SEATTLE, SPOKANE, CANADIAN BROWNHOIST LTD., MONTREAL, QUEBEC.

**Steel Users Push Production Up**

**Truck Freight Rate Increase Due**

**Ingot Rate Gains Another Point**

# **The Iron Age**

## **SUMMARY**

**IRON AND STEEL INDUSTRY TRENDS**

**P**RODUCERS of consumer durable goods—autos, refrigerators, washers — are driving wide open this week to keep production at capacity. Some midwestern steel buyers have even revived the old cry that auto companies are putting on too much pressure for steel. In other words, the steel business is booming.

Some appliance makers are accusing the auto industry of trying to cram 8 months of production into the next four with the result that it is showing up in a bad sheet steel shortage. But consumers report that the steel mills have done a fine job of bouncing back from the strike. The number of delinquent orders have been reduced faster than steel buyers thought they would be. Mills are saying that sheets will be easier after April but some buyers are not so sure.

### **Some Recall 1949 Flasco**

Still, the appliance makers who are pushing production to capacity are beginning to wonder if they may not find themselves in the same jam they got into during the second quarter of 1949. At that time they filled the supply pipelines to capacity. Distributors then got panicky and made sharp inventory cutbacks. In the light of second half sales, these cuts proved too drastic.

Appliance makers report that their steel cost per unit went up about \$1.00 on an ordinary electric or gas range. But by the time their suppliers add their increased costs the total boost may be \$3.00 to \$5.00 per range. At the moment they plan to absorb the increase but it is possible that it will be passed on once the new cost picture is clear.

The same attitude on absorbing higher steel prices prevails in Detroit where Chevrolet posted no advance on its new line last week. As a result of the heavy increases in extra charges on very wide sheets (the extra on 84-in. wide cold-rolled sheet is now \$47 a ton against an extra of \$10 for 62 to 72-in. wide sheets) some changes may be made: (1) Hoods may be made in two pieces; (2) some auto firms may weld small pieces on some sheets to avoid having to use the very wide sheets (one company is already doing this but applications are limited); and (3) car

designers will make a concentrated effort to design for use of the more economical size sheets. Meanwhile, manufacturers of seam welders and slitters are licking their chops over business prospects.

### **Demand Varies By Area**

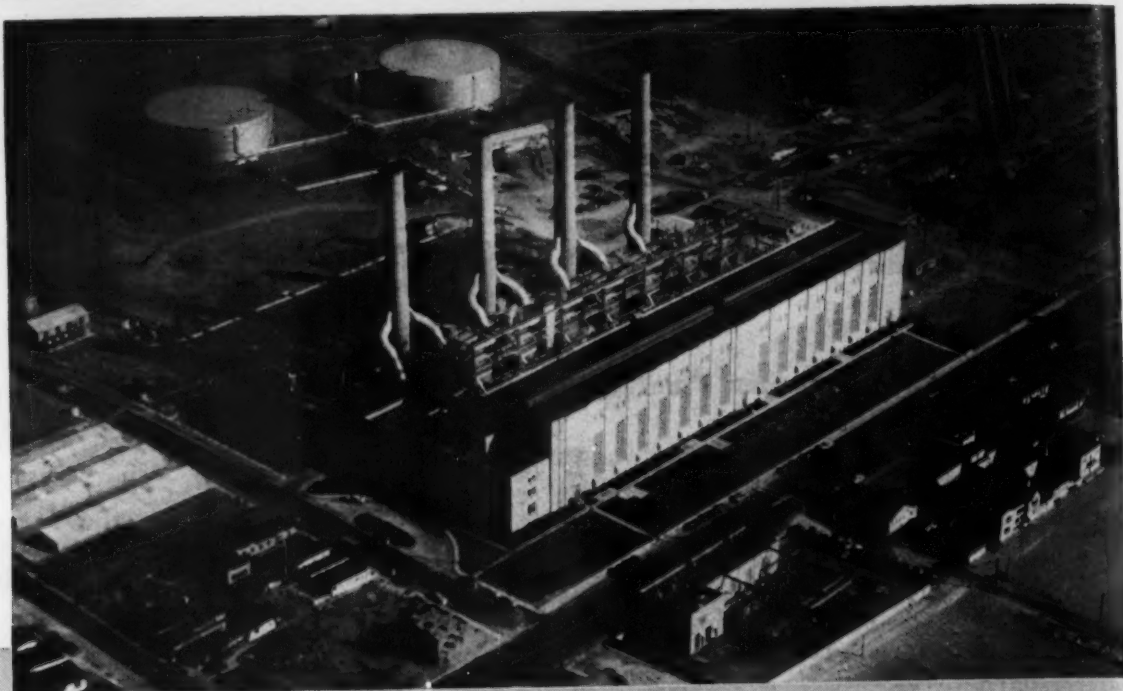
Though demand for sheets and strip is just about as strong as it has ever been since the war, other steel products are mixed, by area. The effect of freight rates shows up in a brisk demand for plates in Chicago where they may go on allocation during the second quarter, while they are relatively easy in the East. Bars are much easier to get in Pittsburgh and the East than they are in the Chicago area. Structural shape demand has eased in Pittsburgh and the East since the strike but is getting stronger in Chicago. Oil country goods and line pipe are still strong throughout the country. A newcomer can not buy pipe skelp anywhere.

Trucking companies hauling steel will post new rates within the next few weeks. By Mar. 1 tariffs generally will be some 15 pct higher. The existing spread between rail and truck rates is anywhere from 25 to 35 pct in favor of the truckers. Narrowing the gap by the proposed increase may decrease the trend toward steel shipment by truck—one large steel company reports that truck shipments increased 12.5 pct last year for a gain of 26 pct in 2 years. For the buyer—no matter what else it does—it increases the tendency to buy steel as close to home as possible.

### **Scrap Prices Are Spotty**

Steelmaking operations for this week are scheduled at 97 pct of 1949 capacity, up a point from last week's revised rate of 96 pct. On today's capacity the rate would be about 94.5 pct. The scrap market remains spotty with No. 1 heavy melting steel up in Chicago and off in Philadelphia and drifting in other areas. Some mills, choked with scrap are lifting embargoes, others are raising inspection standards, sign of a buyers' market. Sellers point to high steel melting operations and a good steel order backlog to justify their expectation of firmer prices within the next few weeks.





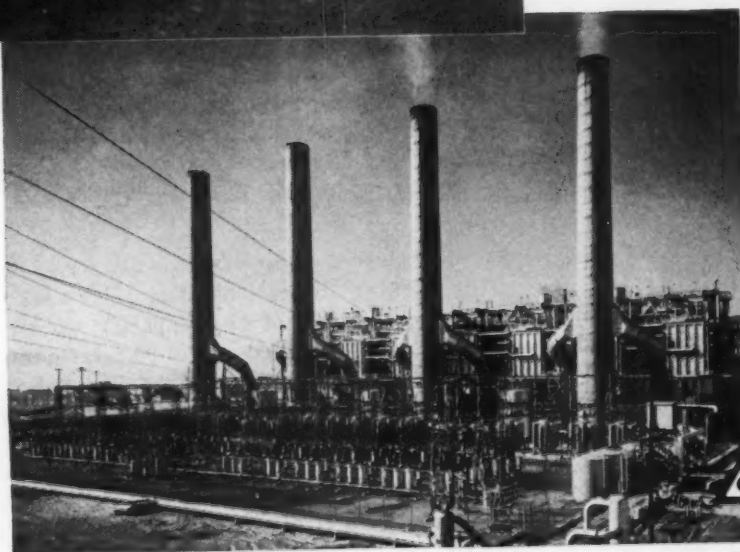
## HELPING TO MAKE THE WONDERS *of* SO. CALIFORNIA *more wonderful*



The 280,000 kw Redondo Steam Station was constructed to keep pace with the rapidly growing power demands of this region. Semi-outdoor design combines economy of construction with operating comfort and convenience and the entire structure has been built to resist the stress of possible earthquake shock. Unique is the provision for control of marine growth through thermal shock during periodic reversal of salt water flow

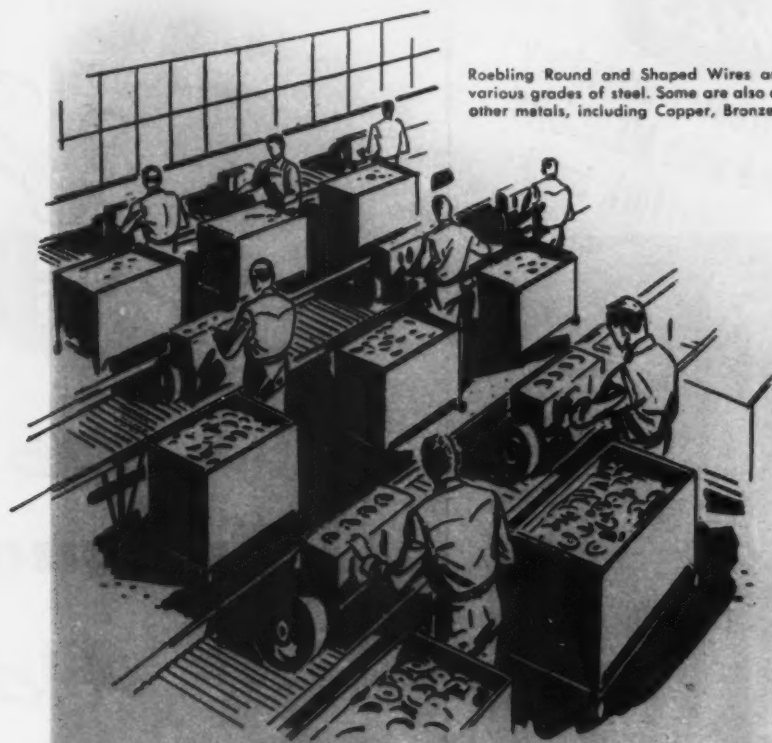
in the two 2,000 foot intake and discharge tunnels which obtain condenser circulating water from the Pacific Ocean.

Stone & Webster Engineering Corporation designed and constructed the Redondo Steam Station for Southern California Edison Company.



# STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.



Roebing Round and Shaped Wires are made in various grades of steel. Some are also available in other metals, including Copper, Bronze and Brass.

Every inch dependably uniform...  
that's why users say...

*Today it's **Roebing!***

## for Oil-Tempered Spring Wire

NO IF'S, ANDS OR BUTS . . . production records show that Roebing Oil-Tempered Spring Wire cuts down machine stoppages and minimizes rejects for users everywhere. This is a *quality* wire. Every inch is alike in gauge and finish . . . absolutely uniform in mechanical and metallurgical properties.

Roebing has one of the largest mills in the country for the making of specialty wires. From steel-making to finished wire, every manufacturing step is performed in Roebing's own plants. Modern techniques and modern precision equipment assure a product that saves you preparation time . . . brings faster, smoother operation.

Your Roebing Field Man will gladly help you choose the best wire—round, flat or shaped—for greatest efficiency and economy. John A. Roebing's Sons Company, Trenton 2, New Jersey.

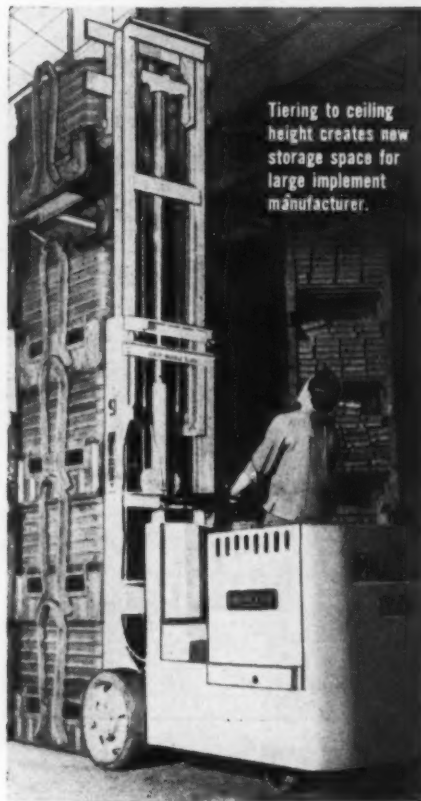
### **ROEBLING** A CENTURY OF CONFIDENCE

Atlanta, 934 Avon Ave. \* Boston, 51 Sleeper St. \* Chicago, 5525 W. Roosevelt Road  
\* Cincinnati, 3253 Fredonia Ave. \* Cleveland, 701 St. Clair Ave., N. E. \* Denver, 4801  
Jackson St. \* Houston, 6216 Navigation Blvd. \* Los Angeles, 216 S. Alameda St. \*  
New York, 19 Rector St. \* Philadelphia, 12 S. Twelfth St. \* Portland, 1932 N. W.  
14th Ave. \* San Francisco, 1740 Seventeenth St. \* Seattle, 900 First Ave. S.





**5 TIMES**  
greater inventory  
handled with MERCURY  
fork trucks



Tiering to ceiling height creates new storage space for large implement manufacturer.

**F**ive times greater inventory handled with no appreciable increase in plant facilities—that's the record established when a fleet of Mercury Fork Trucks replaced former handling methods for this large implement manufacturer.

Tiering to ceiling height created new storage space...unit handling of 2500-4000 lb. loads expedited materials from receiving, through processing to shipping. It'll pay you to consult Mercury's 38 years' handling experience. Ask a Mercury Sales Engineer to call.



Take it up with

**MERCURY**  
38 years handling experience

THE MERCURY MANUFACTURING CO

4144 S. Halsted St., Chicago 9, Illinois

FREE: New 52 page catalog

Illustrates and describes complete Mercury line of Tractors, Trailers, Lift Trucks. Request your copy on company letterhead, today.

TRACTORS TRAILERS LIFT TRUCKS



## Fatigue Cracks

By Charles T. Post

### What's Funny?

The boys down in the brains department were thumbing through the December issue of *The British Steelmaker*, the polished pocket magazine from London, in the hope that a few gold-plated ideas on steelmaking might rub off on their copy paper. After a few pages, they stopped short. The slick pages were peopled not by openhearth operating tips but by reproductions of J. R. Williams' "Bull of the Woods" and your favorite family journal's news section cartoons. Accompanying discussion was headed "We Are Not Amused. . . The American Steel Cartoon." And believe us, the author, Peter Cuddon, uses as sharp a scalpel as Sheffield offers.

No man to make a snap judgment, Mr. Cuddon admits collecting 18 Bull of the Woods cartoons from your f.f.j. before pulling his apron over his eyes.

"If you follow week by week Mr. J. R. Williams' cartoons in *IRON AGE*, you become increasingly embarrassed. It soon becomes apparent that, although the rest of this admirable American steel weekly may be intelligible enough to the British reader, here at least is a part of America that only those with an American background can hope to understand."

Mr. Cuddon is not coy about the reasons for his embarrassment. Part of it is the vernacular of the

title, the unfamiliar characters, the clothes they wear. Undoubtedly the Bull would be just as ill at ease if he stepped into Mr. Cuddon's drawing room at tea time.

Mr. Cuddon is frank in his "disappointment" at the Bull's shop. The characters "are allowed to speak by means of enormous word-laden balloons issuing from their mouths," a technique that "belongs to the nineteenth century humorous journals." They talk too much, and "finally, disappointment and irritation melt into sheer puzzlement when "what emerges is neither wit nor humour to an English mind. Simply laboured repartee without point or speed."

Then Mr. Cuddon turns to the news section cartoons and fairly doubles up with mirth, in a dignified way, of course. "A brilliant piece of nonsense . . . really funny in a direct instantaneous way . . . delightfully absurd and incongruous . . . might have come straight from the pages of our own much-loved *Punch*."

"How comes it," he wants to know, "that *Iron Age* readers apparently enjoy two such extremes of the cartoonist's art, whilst in Britain the one embarrasses and the other kindles delight?"

If Mr. Cuddon will unbutton his vest, loosen his tie and lean back in his chair for a moment, it shouldn't be too hard to explain.

The cartoons that tickle Mr. Cud-

Turn to Page 107



# NEW HELPFUL GUIDE

## to gas regulating problems

This new Airco Regulator catalog gives authentic, understandable information on the function and operating characteristics of regulators for the following types of service —

- for welding, cutting, heating, hardening and inert shielded arc welding.
- on cylinders, manifolds and pipe lines.
- for all types of compressed gases — oxygen, acetylene, nitrogen, hydrogen, helium, argon and other industrial gases.
- for use in the laboratory.
- dual stage regulation . . . single stage regulation — and a quick "reason why" one or the other type would give you desired uniform pressures, at less cost, for a particular job.

Everyone concerned with regulating gases under pressure will find use for this helpful catalog. It will save him time, effort and needless waste of money. It contains data regarding the proper regulator for any given type of job.



### AIR REDUCTION

Air Reduction Sales Company • Air Reduction Magnolia Company • Air Reduction Pacific Company  
Divisions of Air Reduction Company, Incorporated

Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Cutting Machines  
Gas Welding Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories



Send for this valuable, informative guide today! Fill in the coupon below.

#### The Air Reduction Sales Company

A Division of  
Air Reduction Company, Incorporated

Please send me a copy of your NEW helpful guide to gas regulating problems—Catalog No. 5

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

January 12, 1950

# Iron Age Introduces



**ALVIN J. HERZIG**, president, Climax Molybdenum Co.



**H. M. RICH, Jr.**, general sales manager, Electro Metallurgical Div., Union Carbide and Carbon Corp.



**J. M. WILKE**, general manager of sales, Laclede Steel Co.

**Alvin J. Herzig** has recently been elected president of the **CLIMAX MOLYBDENUM CO.**, Michigan. Mr. Herzig joined Climax in 1931 as chief metallurgist. Prior to this, he had been employed as a research associate in the Engineering Research Dept. of the University of Michigan, and then metallurgical assistant of the National Supply Co., Toledo.

**John K. Gustafson** has been appointed consulting geologist to the **M. A. HANNA CO.**, Cleveland. Mr. Gustafson for the past two years has been associated with the U. S. Atomic Energy Commission, Washington, D. C.

**Elmer C. Otto** has retired as a vice-president of **CHAS. PFIZER & CO., INC.**, Brooklyn, N. Y. Mr. Otto has been actively associated with Pfizer for 38 years, having joined the organization as a salesman in 1912.

**H. M. Rich, Jr.**, has been appointed general sales manager of the Electro Metallurgical Div. of **UNION CARBIDE AND CARBON CORP.**, New York. Mr. Rich joined the corporation in 1942 after ten years with Hickman Williams and Co., Detroit.

**Harry J. Anderson** has been promoted to manager of the exhibit section of the advertising division of **UNITED STATES STEEL CORP. OF DELAWARE**, replacing **M. L. Neison**, who has resigned. Mr. Anderson first joined U. S. Steel's exhibit section in 1940.

**Hugh J. Ferry**, executive vice-president has been moved up to the position of president of **PACKARD MOTOR CAR CO.**, Detroit, succeeding **George T. Christopher**, who retired. Mr. Ferry joined Packard nearly 40 years ago. He began in 1910 as a clerk.

**J. M. Wilke** has been appointed general manager of sales, **LACLEDE STEEL CO.**, St. Louis, succeeding **Walter W. Arpe**, who has retired. Mr. Wilke started with Laclede in 1916 in the operating department in Madison, Ill. He is succeeded by **Harold R. Kilpatrick** as sales manager of manufacturers' products.

**Walter E. McArthur**, heretofore eastern regional manager of the Nelson Stud Welding Div. of **MORTON GREGORY CORP.**, Lorain, Ohio, has been appointed manager of industrial sales. Mr. McArthur joined the Nelson organization as a field engineer in 1943.

**J. E. Simonin** has been appointed works manager of **PITTSBURGH STEEL CO.**, Pittsburgh. Mr. Simonin has served as plant metallurgist for the past eleven years.

# Iron Age *Salutes*

CHARLES M. WHITE

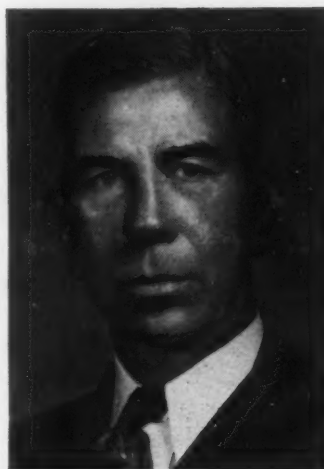


CHARLES J. FRENCH, national public relations director, Chevrolet Motors Div. General Motors Corp.

Charles J. French has been named national public relations director for the Chevrolet Motor Div. of GENERAL MOTORS CORP., Detroit. W. G. Power was appointed to succeed Mr. French as Chevrolet advertising manager. Mr. French headed up publicity and public relations for the Chevrolet sales department prior to becoming advertising manager in 1946. Mr. Power joined Chevrolet in 1928 as a representative in Flint, Mich.

Leo S. Ohman has been elected to the newly created position of vice-president in charge of manufacturing for HANNIFIN CORP., Chicago. Mr. Ohman joined Hannifin in 1948 as factory manager after serving as chief industrial engineer for the Brown Instrument Co., Philadelphia, and later for the Chefford Master Mfg. Co., Inc., Fairfield, Ill.

Turn to Page 94



A FEW years ago it would have been rash to say that America was running out of iron ore. Whoever said this would have been sticking his neck out. Yet one steel man said it. He said it with a speech which is still an iron ore classic.

That man was Charles M. White, president, Republic Steel Corp. On Mar. 17, 1947, Charlie—as he is known by his friends and enemies—warned that iron ore reserves in this country were getting dangerously low. He said it before the American Institute of Mining & Metallurgy. But that isn't the whole story.

Charlie White practices what he preaches. For years he has needed his own people on ore reserves. He was one of the first top men to be sold on the value and need for New York Adirondack iron ores.

Today his company gets a large share of its ore supplies from upper New York State. But he wasn't content even there. He upheld his men on their recommendations to go as far as Africa. The result was an investment in Liberian ore property.

Charlie White is one of the American supporters of the vast Quebec-Labrador discoveries. His company, with him as the driving force, was one of the five which now have an option in the development of that field. Thus, only 2 years after his talk, he has carried through on his own warning; he has done much to make other steel people iron ore conscious.

THE IRON AGE salutes Charlie White

for more than his singleness of purpose on the ore question. No one who comes near Charlie or works for him can escape the power he has to command loyalty.

He does have a chip on his shoulder where the steel industry is concerned. He dares anyone to knock it off. And when they do he has punchy comebacks—comebacks that stand out in this period of pussyfooting.

He is a tough man. For 5 years he was an executive in a company that had terrific deficits during the depression. He is one of the most cost-conscious men in the country. His absolute frankness is what holds his men to him. He is a driver, but a pleasant one. But he has no ulcers. He works the tails off his men—and they like it.



## DO YOU HAVE A FURNACE PROBLEM LIKE THIS?

To build furnace walls so  
radiant heating tubes can  
be easily installed



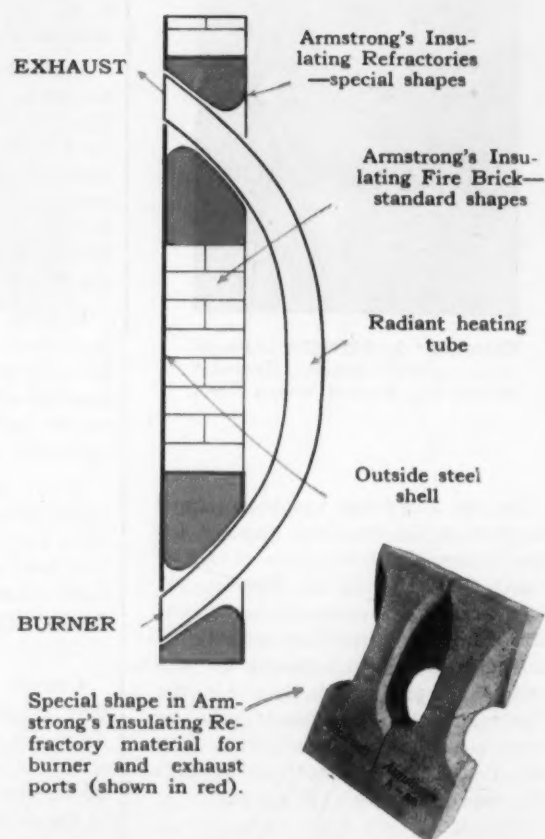
### Here's how it can be solved:

It takes many hours of highly skilled labor to shape standard insulating firebrick by hand to fit around intake and exhaust ports of furnaces. This expense can be reduced by the use of refractories machined at the factory into the proper shapes.

These shapes speed the bricklaying job and make it a better one. Each shape is accurately designed and machine-cut to provide the exact amount of clearance needed for tube expansion. They allow easy installation and removal of tubes without disturbing the furnace wall.

Armstrong's Insulating Refractories are well suited to this special fabrication. They are machined from rectangular blocks that have been fired in advance. Extremely accurate shapes are possible because these blocks are strong and fine grained. Edges and corners are sharp and clean, making these shapes easy to handle and reducing time required for installation.

In addition, Armstrong's Insulating Fire Brick, for temperatures from 1600° to 2800° F., are exceptionally resistant to special atmospheres, have high insulating efficiency and low heat storage, and are lightweight. If you have a furnace problem involving the use of insulating refractories, Armstrong will be glad to help you solve it. Just call the Armstrong office nearest you or write directly to Armstrong Cork Company, 4901 Mulberry Street, Lancaster, Pa.

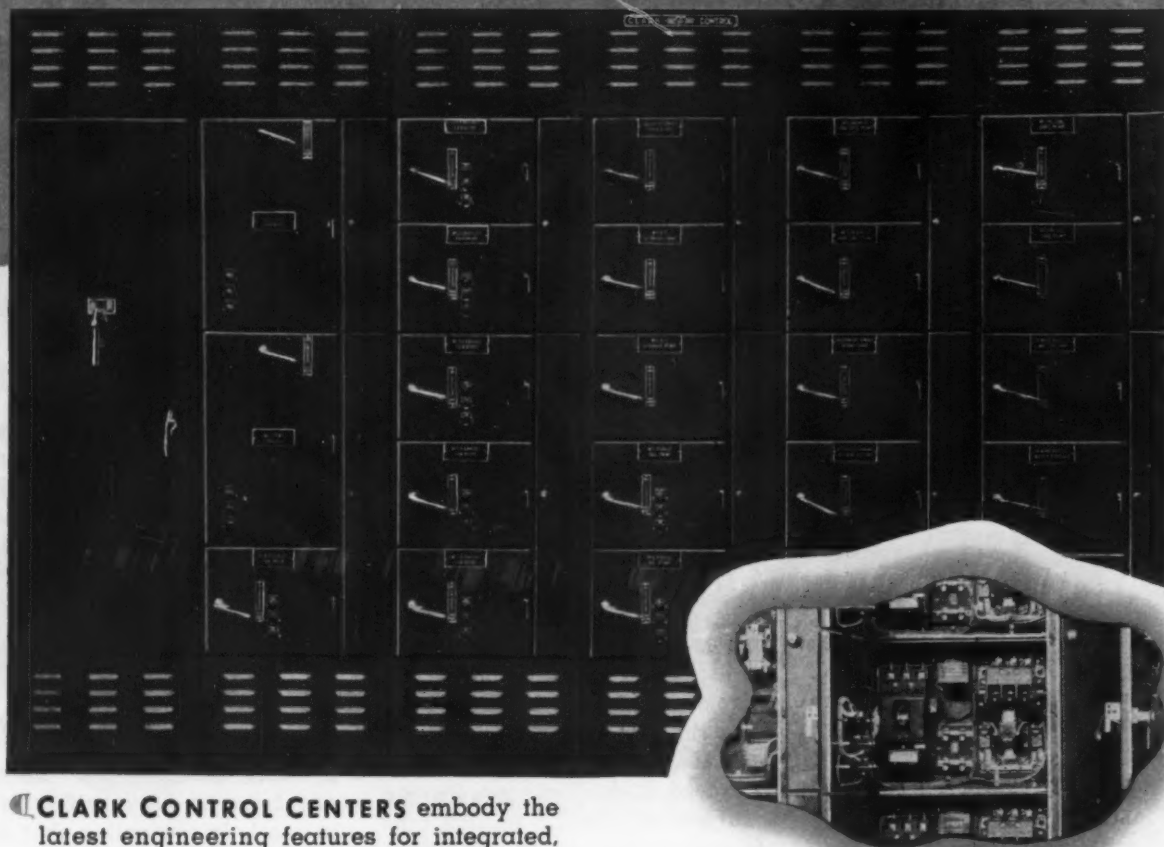


## ARMSTRONG'S INSULATING REFRACTORIES

Presenting . . .

# CLARK CONTROL CENTERS

**New! Modern! Efficient!**



CLARK CONTROL CENTERS embody the latest engineering features for integrated, economical, efficient, neat installations of A.C. Motor Starters with Circuit Breakers, or Fusible Disconnect.

Each section is 90" high, 24" wide, and 20" deep, and all sections can be arranged in any angular pattern to meet floor space requirements. Additions to existing installations are easily made.

The 24" width has the definite advantage of supplying liberal wiring space for all units. For starters up to and including Size 3, a 6" wiring trough with hinged door is provided.

Units are 13" high, or a multiple thereof. Each section accommodates any combination of starters (Sizes 1 through 5) totalling 65" in height. Rearrangements are easily made at any time.

*Close-up view of Size 2 Starter and Circuit Breaker.*

- ⌚ Louvres, top and bottom, provide adequate ventilation, and avoid accumulative heating.
- ⌚ Units are "plug-in" type, easily removed.
- ⌚ Load and control leads, and horizontal line bus can be placed in either the top or bottom and can be interchanged.
- ⌚ The control equipment and wiring troughs are accessible from the front, by simply opening a door.
- ⌚ Vertical sections are mounted on a common floor channel for rigidity and perfect alignment.

*For full details ask for Bulletin 6200*



**THE CLARK CONTROLLER CO.**

ENGINEERED ELECTRICAL CONTROL • 1146 EAST 152ND STREET, CLEVELAND 10, OHIO



# GLOBAL LETTER

## REVIEW OF WORLD MARKETS

**Surplus of 8 million tons of steel in Europe seen by 1953 resulting from uncorrelated plans . . . British nationalization threatens to engulf engineering firms.**

Geneva—Current plans for steel production in Europe are likely to result in a surplus of 8 million tons which will not find a market in 1953.

This is one of the basic conclusions reached in the study entitled "European Steel Trends in the Setting of the World Market," which has been prepared by the Secretariat of the Steel Div. of the United Nations Economic Commission for Europe.

The study points out that if the individual steel production plans of European countries (excluding the USSR) are added together, a total production is arrived at in 1953 of 70 million tons.

### **Raw Material Prices High**

Compared with this, the Steel Div. Secretariat reaches the conclusion that the practical maximum consumption within Europe in 1953, provided it is a year of full employment, will be 58 million tons.

An extensive survey of world producing and consuming areas further revealed that the maximum that Europe is likely to be able to export to overseas markets in 1953 is 4.1 million tons.

This is equal to about 80 pct of the estimated overseas import requirements of some 5 million tons. Thus the total demand for European steel in 1953 is not expected to exceed 62 million tons, leaving a surplus of about 8 million tons of crude steel.

### **Supply-Demand Paradox**

In fact, the study points out, in order to achieve an efficient self-supporting European economy, which would provide a high level of steel consumption and enable Europe to recapture an 80 pct share of the world's steel markets, the prices of raw materials in Europe would have to be reduced and her production efficiency improved by suitable modernization of plant and equipment.

With the exception of manganese ore, Europe as a whole could be self-sufficient on an economic basis, as far as steelmaking raw materials are concerned. It therefore lies in her power to improve her efficiency and restore her competitive ability in world markets, the study indicates.

Shortages still persist in some countries for some kinds of steel. But they are no longer due to a

lack of production capacity. Payment difficulties arising either from a lack of money to invest in steel consuming enterprises (as in Germany) or from a lack of suitable currencies with which to pay for requirements, still prevent potential demand from being met. Thus the European economy today presents a picture of unutilized capacity in the face of unsatisfied demand.

The study also points out the growing tendency for individual countries to seek self-sufficiency in steel. It recognizes that in the past, some steel-producing countries have used their position to exert political or economic pressure on those countries relying on them for supplies. That this has inevitably tempted even small countries to build up national, frequently uneconomic, steel industries, protected by tariffs and other artificial barriers.

### **Warns of Protected Industry**

Furthermore, the immediate postwar steel shortage tempted producers to take advantage of the situation, and to demand disproportionately high prices. This was a further inducement to importers to create their own national steel industries.

The study stresses that from any long-term point of view, these measures are unrealistic and likely to create conditions detrimental to the European economy. It warns that development of un-

*Turn to Page 110*

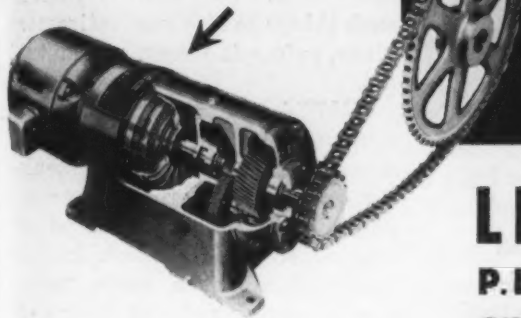


# PACKAGED POWER"

**DRIVES HUGE PRESS  
SMOOTHLY - - - AT  
EXACT SPEED**

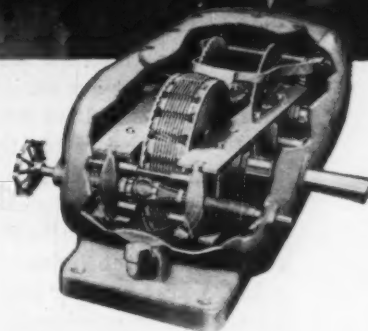
## LINK-BELT

**ELECTROFLUID DRIVE  
SMOOTHS OUT  
SHOCK LOADS**



## LINK-BELT

**P.I.V. VARIABLE SPEED DRIVE  
GIVES PRECISE SPEED**



The advantages of the Electrofluid Drive are available on virtually any power application through combination with other Link-Belt enclosed gear and chain drives. Above is shown one such combination affording shock-proof, economical power transmission at precisely controlled speed.

Three principal advantages of this drive are:

- (a) It provides smooth power transmission, assuming the load gradually, and eliminating shocks.
- (b) It prevents damage to costly power-driven equipment and eliminates work stoppages.
- (c) It permits the use of a smaller motor than ordinarily required to handle starting loads, improves power factor and overall efficiency.

### TYPES OF LINK-BELT POWER TRANSMISSION MACHINERY

Precision Steel Roller Chain	P.I.V. Variable Speed Drives
Silverstreak Silent Chain	Fluid Drives
Steel and Malleable Chain	V-Belt Drives
Worm Gear Drives	Ball Bearings
Herringbone Gear Drives	Roller Bearings
Helical Gear Drives	Babbitted Bearings
Gearmotors	Couplings, Clutches, Collars, etc.

Coupled with the Link-Belt P.I.V. Variable Speed Drive, this installation permits instantaneous adjustment of output speed within the smallest fraction of a revolution, to meet the exact requirements of the work in hand.

Ask for Book No. 2385 for full details and application suggestions on the Electrofluid Drive.

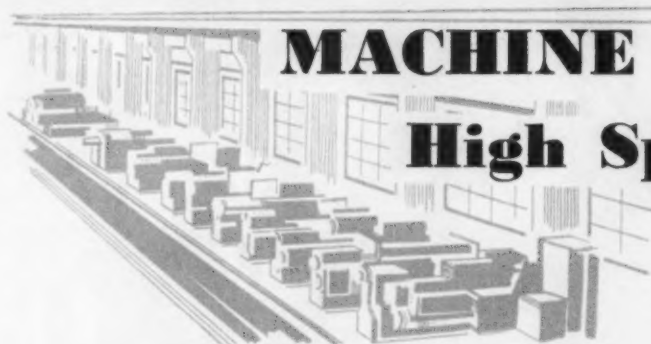
Book No. 1874-B gives corresponding information on the P.I.V. Variable Speed Drive.

### LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5,  
San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8.  
Offices, Factory Branch Stores and Distributors in Principal Cities.



**Power Transmission Machinery**  
**"THE COMPLETE LINE"**



# MACHINE TOOL

## High Spots

Sales  
Inquiries  
and Production



by

*William A. Lloyd*

**Preliminary reports indicate a good first quarter . . . Auto industry tooling for new engine programs . . . Tool costs analyzed.**

**Cleveland**—Paced by a new engine program, emanating from Detroit's automobile industry, and prospects of substantial replacement buying by a number of other industries that are major users of machine tools, 1950 was getting off to a fast start for the bulk of the machine tool industry this week.

Preliminary reports from major segments of the industry indicate a large first-quarter sales volume, based on the number of inquiries and quotations. Industry observers, however, feel that the 1950 sales pattern will be much like that of 1949. That is, orders will be spotty and the spread uneven.

### **New Engine Programs Expected**

In any event, the machine tool industry looks to be a good bet to prove an exception of the predicted downturn in the capital and producer goods industries this year.

In Detroit, the tempo of machine tool activity continues at a high level. Reports from reliable sources indicate that Chrysler, Ford, and Studebaker are about to embark on new engine programs.

Some tooling orders have already been reported on the Studebaker V-8 program. Chrysler is continuing to take quotations and

actual placement of first order has been reported. Present reports show initial tooling will be for 20 high compression engines per hr, indicating that Chrysler division engines only will be built at the start, at the Jefferson plant.

### **New Ford Engine Rumored**

The new Ford engine program is still unconfirmed but available reports show that a new Ford engine plant will probably be located in the Cleveland area. Present indications are that a new overhead valve, high compression six-cylinder engine will come first on the Ford program. The entire long-range engine program for Ford may embrace five new engines. Meanwhile, orders are being placed daily by Ford for tooling for the new transmission to be built at Cincinnati.

### **Issues Machine Tool Booklet**

Announcement by Kaiser-Frazer this week that Willys-Overland Motors, Inc., Toledo, will build the new "Supersonic" engine for the K-F light car confirms a report made in these columns several months ago. The recent announcement said that the contract provides for additional tooling facilities to be supplied by K-F for the Willys plant.

In Cleveland, National Machine Tool Builders Assn. has issued a new booklet, "Computing Return on Invested Capital," which in simpler terms is a study in machine tool arithmetic.

The booklet points out that hesitation in purchasing new equipment frequently stems from the lack of figures as to what the new machine tools could do dollar-wise over the investment period representing the estimated profitable life of the machine, and offers a method of calculation practicable for the average manufacturer.

### **Considers All Possibilities**

Steps include determination of what the new machine will include in direct labor costs, which include not only gross wages but factors, forming part of overhead, which bear a relation to direct labor hours and which must be considered in arriving at a true labor cost. The factors include such things as sick pay, retirement plans, cafeteria losses, and mutual aid.

NMTBA points out that in addition to these savings that can be determined by definite calculations, there are other important possibilities which cannot be appraised so easily, which include lower maintenance costs, reduction of scrap, reduced in-process inventory from faster flow of materials, and others.

### **Can Recover Costs in 10 Years**

The final step concerns depreciation allowances and federal income taxes. NMTBA recommends that because designs in the machine tool industry have a relatively short life, a machine tool usually should be "written off" in 10 years.

However, a manufacturer can recover the cost of the machine realistically in 10 years, in spite of the U. S. Treasury limitations, by recovering half on a tax free basis through allowable depreciation and the other half from profits after taxes.

Key to machine tool arithmetic is the machine tool salesman, according to NMTBA, who knows the machine and can furnish an estimate as to what savings a new machine would effect.



chine  
ed a  
return  
h in  
ma-

n of  
clude  
a in-  
fac-  
head,  
irect  
t be  
true  
clude  
ment  
utual

addi-  
n be  
cula-  
rtant  
e ap-  
clude  
educ-  
ocess  
ma-

ears  
epre-  
deral  
com-  
n the  
rela-  
tool  
T" in

can  
chine  
spite  
ions,  
free  
ecia-  
from

metic  
, ac-  
nows  
h an  
new

AGE



**Lighten  
the cost  
of your heavy-  
duty metal cutting**

## ...with the greater speed and feed you get from **SIMONDS Inserted-Tooth Metal Saws**

It takes Simonds Steels . . . especially hard for the teeth, especially tough for the plate; Simonds designed tools and machines; and many years of metal saw making experience to produce this heavy-duty metal-cutting saw. High Speed Steel Teeth with rounded gullets roll out chips which do not choke, bind or weld to the saw plate. Find out from your Simonds Distributor about these top quality Metal-Cutting Saws. Call him today.



INSERTED-TOOTH, SEGMENTAL, AND SOLID SAWS FILES METAL BANDS FLAT GROUND STOCK HACK SAW BLADES

**BRANCH OFFICES:** 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Ave., Portland 4, Ore. **Canadian Factory:** 595 St. Remi St., Montreal 30, Que.

**SIMONDS**  
SAW AND STEEL CO.  
FITCHBURG, MASS.

Other Divisions of SIMONDS SAW AND STEEL CO.  
making Quality Products for Industry

**SIMONDS**  
SAW AND STEEL CO.  
Special Electric  
Furnace Steels

**SIMONDS**  
Grinding  
Wheels  
and Grains

**SIMONDS**  
SAW AND STEEL CO.  
Simonds Products  
for Canada



# FREE

USE POST CARD

## PUBLICATIONS

### Precision Tools

The Matco tool room precision universal dividing collet head for production use is described in 5-p. catalog. Uses to which this tool may be put plus a listing of other tools, dies, and fixtures manufactured by this firm are available. *Center Tool & Mfg. Co.* For more information, check No. 1 on the postcard.

### Hole Punching Units

How holes can be punched in sheet and extruded stock through use of the Wales type E hole punching units mounted in press brakes and stamping presses is covered in 12-p. catalog. *Wales-Strippit Corp.* For more information, check No. 2 on the postcard.

### Fire Hose

The uses, construction, special treatment, and underwriters' specifications of the Republic line of fire hose are described in 12-p. folder. *Republic Rubber Div., Lee Rubber & Tire Corp.* For more information, check No. 3 on the postcard.

### Screw Machines

New folder describes cost cutting methods in the manufacture of screw machine parts through use of the Kempsmith line of high speed precision machines. *Kempsmith Machine Co.* For more information, check No. 4 on the postcard.

### Contour Projector

Designed for the speedy inspection of parts, new Kodak contour projector for optical comparison in both the inspection department and

**New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.**

the toolroom is described and its uses outlined in 8-p. illustrated folder. *Eastman Kodak Co.* For more information, check No. 5 on the postcard.

### Hydraulic Pumps

Applications of Commercial hydraulic hand pumps that operate in any position-pressures up to 5000 psi are photo-illustrated in 8-p. folder. *Commercial Shearing and Stamping Co.* For more information, check No. 6 on the postcard.

### Centralized Lubrication

Designed to eliminate bearing burnouts and cut lubrication costs, the Trabon type M system, supplying lubrication individually to each bearing, is described in bulletin 484 of new brochure. Descriptions of other types of oiling and greasing systems are also included. *Trabon Engineering Corp.* For more information, check No. 7 on the postcard.

### Strain Gages

Detailed procedures for attaching SR-4 resistance wire strain gages to surfaces are presented in 8-p. bulletin. *Baldwin Locomotive Works.* For more information, check No. 8 on the postcard.

### Press Brakes

For forming mild steel in thicknesses from 3/16 to 1 in. and in lengths from 4 to 20 ft, new line of Columbia power press brakes with 120 to 900 ton capacities are described and illustrated in 4-p. folder. *Columbia Machinery & Engineering Corp.* For more information, check No. 9 on the postcard.

### Heat Treating Unit

An atmosphere-controlled, fully automatic, batch-loading, universal heat treating unit, a new addition to the Ipsen line of automatic heat treating furnaces, is presented in 4 p. of photos, drawings, and text. *Ipsen Industries, Inc.* For more information, check No. 10 on the postcard.

### Hydroscale

The Hydroscale, that weighs loads as they are lifted from vehicles and storage, is described in 4-p. catalog through use of photos and text. *Hydroway Scales, Inc.* For more information, check No. 11 on the postcard.

### Anti-Friction Die Sets

The line of Lempco anti-friction die sets including standard 2 rear post, 4 post rectangular, and 2 rear

**Turn to Page 103**



## you'll "TAG" more profits with this precision rolled strip

CMP Thinsteel is a genuine strip product with all the characteristics of superior accuracy to gauge, surface, finish and edge, which distinguish it from other types of cold rolled products.

You can sometimes buy cold rolled sheets slit to strip steel widths at a lower per-pound price than CMP Thinsteel—BUT, if you will total the steel weight you actually use for any given number of units, thus produced, determine the time required to produce them, including down-time for jammed dies and die changes, and check the total number of salable units which result, after allowing for rejects, we believe a comparable check on an equal weight of CMP Thinsteel will show you worthwhile savings. We shall be glad to arrange for a competitive test to be run at your convenience.



**Cold Metal Products co.**

YOUNGSTOWN 1, OHIO

NEW YORK • CHICAGO • DETROIT • ST. LOUIS • INDIANAPOLIS • LOS ANGELES

January 12, 1950

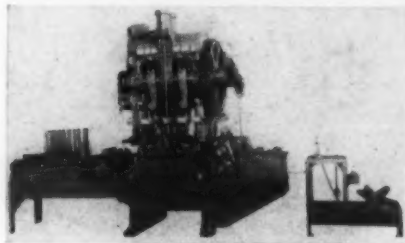
35

# NEW

## PRODUCTION IDEAS

Continued

punched and sheared to length. Punched pieces are then automatically delivered to the stacker by means of rotating brushes where they are stacked, from the bottom up, into two separate piles by an elevator that raises the stacks to permit a series of fingers to position the next finished pieces. The



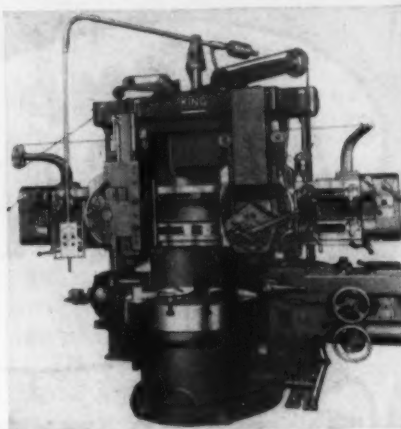
finished stacks can readily be removed from the stacker without disturbing the operation of the press. Strip material in widths of  $2\frac{1}{4}$  to  $3\frac{1}{2}$  in., and lengths of 21 to 35 in., may be fed into the machine. This single geared press equipped with a single-station electrically controlled drum-type air-friction clutch is arranged with uncoiler, roll feed and stacker to make radiator fins. *Cleveland Punch & Shear Works Co. For more information, check No. 24 on the postcard on p. 33.*

### Power Screw Driver

Engineered for high-speed mass production lines, the new Shake-proof power screw driver features hopper feeding, driving speed of more than one screw per sec in the small sizes, uniform tightening torque and a minimum of down time for conversion or adjustment. Practically all types and styles of screws in sizes ranging from No. 1 x  $\frac{1}{8}$  in. to  $\frac{1}{4}$  x  $\frac{3}{4}$  in. are accommodated by the specially designed hopper and driving spindle of the new driver. Installation of the unit consists of plugging into a 110-v outlet and connecting to the compressed air supply line. *Shake-proof Inc. For more information, check No. 25 on the postcard on p. 33.*

### Boring Mills

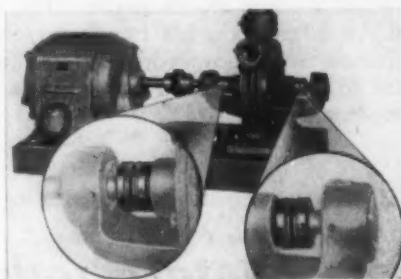
Easier operation, longer service life, and greater accuracy are claimed advantages of a line of King boring mills. Ten sizes are available: single column, sizes 30, 36 and 42 in.; double column, sizes 52, 62, 72, 84, 100, 120, and 144 in. All sizes are obtainable in a variety of head combinations, with or without side head. Heavier and more rigid construction, increased power, and a wider range of feeds and



speeds make the new mills suited to the successful use of carbide tools. The 42-in. model illustrated has a left-hand swivel ram head, right-hand swivel turret head, and a side head. *King Machine Tool Div., American Steel Foundries. For more information, check No. 26 on the postcard on p. 33.*

### Boiler Feed Pumps

Claiming 100 pct maintenance, free operation, the new Schaub line of condensate and boiler feed

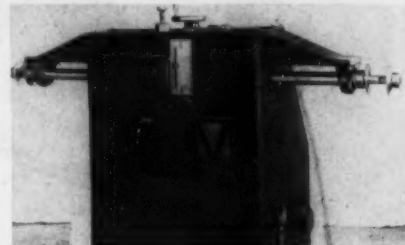


pumps feature Fleximatic mechanical seals that eliminate pump packing, and permanently lubricated

ball bearings. Magnified view shows Fleximatic mechanical seal that manufacturer claims will never leak, and that cannot score the pump shaft. This seal automatically adjusts seal face tension proportional to internal pump pressure, and makes up for any possible axial misalignment. *Fred H. Schaub. For more information, check No. 27 on the postcard on p. 33.*

### Buffing Machine

Featuring an underslung spindle, a new buffing and polishing machine, designed for unusual rigidity by



having the bearing support entirely above the spindle, claims no structural interferences for locating the motor and power transmitting apparatus. The frame was designed for accurate bearing alignment as well as strength and rigidity. This new Marschke buffing machine is made with one and two spindles and is available in motor sizes from 1 to 30 hp. Manufacturer claims that the novel design offers the operator freedom of action by eliminating under-the-spindle interferences between the wheels and side walls of the base. *Vonnegut Moulder Corp. For more information, check No. 28 on the postcard on p. 33.*

### Gusher Pump

A newly improved gusher pump that operates at either 500 rpm pulley speed with a capacity of 10 gpm, or at 1200 rpm with a capacity of 44 gpm, includes both a 5 and 7-in. diam V-belt pulley for size A belts, and claims several important improvements. The driving mechanism, consisting of an enclosed housing containing a pair of hardened steel bevel gears, supports both the horizontal and vertical shaft that rotates on a precision ball bearing. Automatic lubrication is provided by a built-in centrifugal pump that operates simultaneously with the vertical

Turn to Page 104



**F.E.I.**

*Furnaces ... THE ALL-IN-ONE BUY*

*For* **GALVANIZING**

### *Kettle Life More Than Tripled with F.E.I. Patented Settings*

Out of Furnace Engineers' more than 30 years experience has come the ALL-IN-ONE BUY for galvanizing that sets new records for high production at low cost.

**UNIQUE DESIGN ... NO STACK REQUIRED.** In a typical Pipe Galvanizing plant, kettle life was increased from 20,000 to 70,000 tons, thanks to F.E.I. patented baffle type burners and eductor, requiring no costly stack.

**AUTOMATIC CONTROL ... FLEXIBILITY.** F.E.I. fully automatic control insures uniform temperature, flexible high and idling operation, minimum fuel consumption, increased output. Loss from shut-downs, formerly a major item, is now negligible. F.E.I. service is complete — from original analysis of your needs through to actual production.

#### **WRITE FOR THIS BULLETIN**

It tells how F.E.I. technique has made ordinary methods obsolete.



**SHEETS · TUBES · METALWARE**

Top photo: F. E. I. equipment for galvanizing sheets.

Lower photo: F. E. I. installation for galvanizing metalware.

**Furnace Engineers, Inc.**

F. E. I. Building • 1551 West Liberty Avenue • Pittsburgh 16, Pa.

# On the ASSEMBLY LINE

## AUTOMOTIVE NEWS AND OPINIONS

**GM's unique employee relations experiment is clicking . . .  
More than 8 million booklets distributed in less than a year  
. . . Other companies may install a similar program.**



by

*Walter G. Patten*

**Detroit**—A "Help Yourself" information service started as an experiment in employee relations a year and a half ago may turn out to be the most effective move General Motors has made in its well-organized effort to establish satisfactory communications channels with its employees.

By means of its unique Information Rack Service big GM is delivering a helpful booklet on some timely subject to nearly two-thirds of its 400,000 employees every 10 days. Started experimentally last February by Harry B. Coen, vice-president, the new service is attracting nationwide attention.

### **Service Is Company-Wide**

The Information Rack Service is now company-wide. Nearly 800 distribution racks are in opera-

tion. During the past 11 months GM employees have taken home more than 8 million of these specially printed booklets. More than 90 titles have already been distributed. Schools, chambers of commerce, scout troops, and churches have been added to the demand by employees for the kind of self-help GM is making available. GM's competitors have been watching the development. Another auto firm may start a similar service for its employees in the near future.

This new approach to employee communications has been carefully nurtured and developed by the GM Employee Relations Dept. which has strong convictions about "accentuating the positive."

### **Employees Show Interest**

The earliest indication that an employee information service was needed came from questionnaire cards enclosed with GM president C. E. Wilson's annual report to employees. In 1948 GM's letter-writing contest on "My Job and Why I Like It" brought letters from 174,854 employees. The letters showed that GM workers had a real interest in self-help information and facts about business. After an exhaustive study of the contest letters, Mr. Coen decided that something ought to be done to fill this need.

The first booklets were made available to employees on a dozen special racks located in five different GM plants. The response was instantaneous and unmistakable.

After a 3 months' trial, a questionnaire booklet was placed in the racks. Employees praised the new information service generously and asked that it be expanded. In addition, 60 pct of the workers who answered the questionnaire took the trouble to add their personal comments, thanking GM for the service.

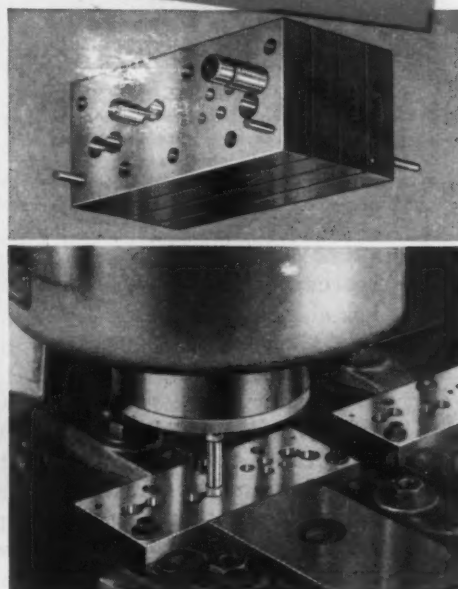
### **Plan Entirely Voluntary**

In making available a fund of miscellaneous booklet information, GM doesn't attempt to impose on employee reading habits. The plan is entirely voluntary. The booklet-filled racks, hanging at points of easy access, are there simply for the asking. The employee can "take 'em or leave 'em."

The upper right hand corner of the display rack is a white target with a plastic disc insert in the center. Into this disc is fitted the featured booklet of the current series. Printed in red is this notation, "Don't Miss This One." To the left of the white target is a white-lettered reminder, "Have You Read These?"

After its initial success, the information service was extended to all GM divisions. Corporation-wide

**53% time-saving**



**Bulletin gives complete details on PAW Jig Grinder; send for your copy.**



39





**GOOD EMPLOYEE RELATIONS:** During the past 11 months General Motors employees have helped themselves to more than 8 million free booklets distributed from more than 800 racks in GM plants and offices. Subjects ranging from garden hints and engineering to money-saving dishes for the housewife are included in the free booklets. The plan is operated by the GM Employee Relations Staff. Two new booklets are made available on every eighth working day.

service was started with 400 racks last February. The number of racks has since been doubled. Approximately 250,000 booklets are being distributed during each period of 7 working days.

The GM Employee Relations Staff has paid special attention to subject matter and its presentation. The racks contain five current offerings plus the provocative suggestion: "Help Yourself."

GM doesn't depend exclusively on company-gathered information. It draws material from popular magazines, books, insurance companies, research foundations, government publications—any source that has something interesting to offer. An occasional booklet will contain a postcard or questionnaire asking readers to express their likes or dislikes. Postcard

returns indicate large numbers of GM readers are deeply interested in inspirational, self-improvement or religious matters.

The "pick-up" record during the quarter ended May 1949 is illuminating. The pick-up rate is determined by dividing the total number of copies taken by the employees by the total number of GM workers in the participating divisions.

	PICK-UP RATE
1 Money-saving Main Dishes	38
2 The Story of General Motors	26
3 Annuals and How To Grow Them	35
4 The Search That Never Ends	35
5 The ABC's of Hand Tools	33
6 Diesel, the Modern Power	33
7 First Aid	31
8 Why We Built The Train of Tomorrow	27
9 Garden Guide	25
10 Your Heart	25

**PLYMOUTH FOR 1950:** A new front grille and a substantial change in styling and lighting equipment at the rear of the car are among the important changes in the new 1950 Plymouth models. Shown here is the Plymouth Special DeLuxe four-door sedan, one of nine new Plymouth models.



Other titles for which GM employees have shown a strong preference include, "Help Your Child to Safety," "Profits for Consumers," "Money-Saving Main Dishes," "Is Business in the Doghouse?" and a number of selections from Guideposts, a practical guide to successful living edited by Norman Vincent Peale.

#### Requests for Booklets

The company constantly checks new titles to obtain a further measure of the true interests of its workers. More and more, copies of the GM booklets are being requested by libraries, community groups, parent-teacher associations and churches. GM is making available to any industrial concern requesting it, all the information needed to set up a similar service in an industrial plant.

It may be pointed out that GM's information service plan is not subject to many of the usual attacks on employee relations programs. The plan is entirely voluntary. No booklet is ever imposed on an employee. He merely "helps himself" if he's interested. The information is carefully selected to interest *both* the worker and his family.

As a company activity it has the advantage of low distribution costs since no booklets are mailed and there is practically no waste. An attractive display calls attention to each new booklet as it is added to the list.

#### Subjects Are Diversified

Subjects to be covered in the future include everything from plans for new homes and instructions for home craftsmen to planning a vacation. One of the most popular booklets described a series of games that will keep the kids amused while the family is traveling in the car on vacation.

GM has some well-established objectives for its Information Rack Service. An Employees Relation Staff member recently put it this way:

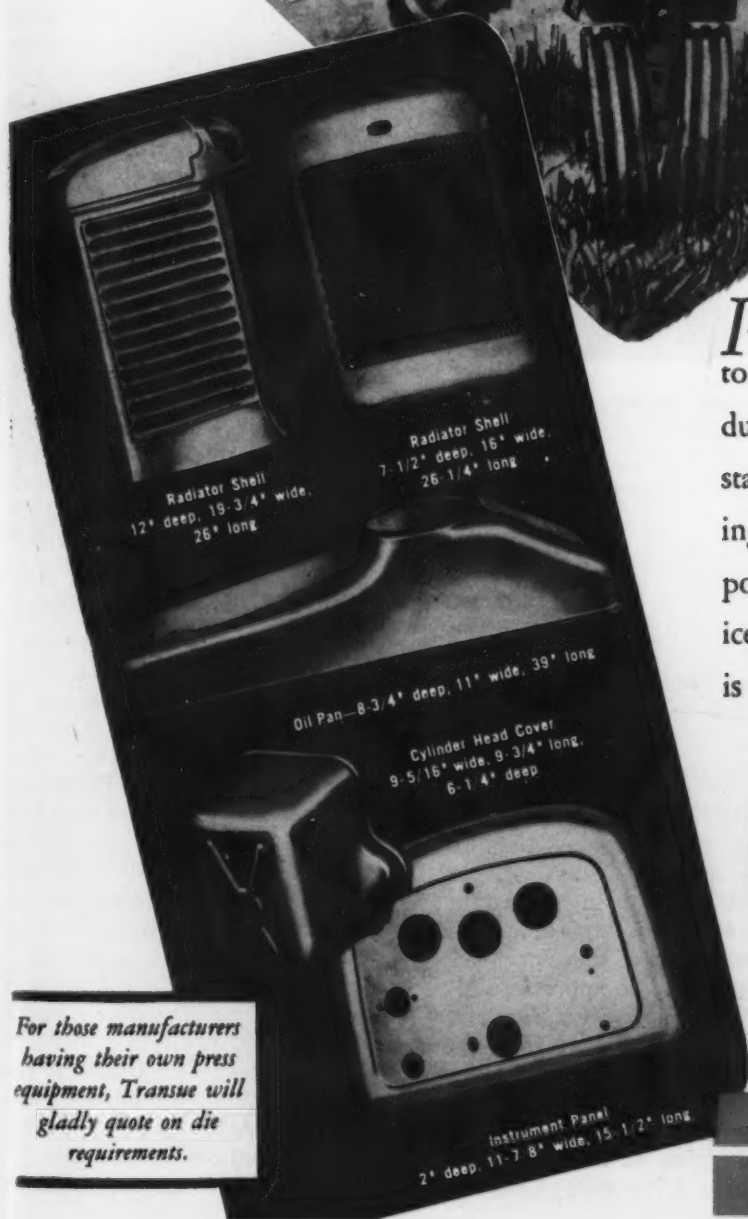
"Our aim is to put before our people the mental menus that will give them practical aid and will help them think straight and grow in understanding."

# T and W

## STAMPED TRACTOR PARTS



No. 1 of a Series



*For those manufacturers having their own press equipment, Transue will gladly quote on die requirements.*

**I**F you are interested in redesigning to improve your product and cut production costs—these deep drawn steel stampings, made by Transue for leading tractor manufacturers, may suggest possibilities. Transue engineering service is free of cost or obligation—and is available to you.

**Designers and Makers of  
Deep Drawn Stampings**

**TRANSUE &  
WILLIAMS  
ALLIANCE, OHIO**

SALES OFFICES, NEW YORK, PHILADELPHIA,

CHICAGO, DETROIT, INDIANAPOLIS, CLEVELAND



# WEST COAST PROGRESS REPORT



**Steel producers lower sights for 1950 . . . Bethlehem plans for L.A. openhearth indefinite . . . Aircraft plant dispersal unlikely.**

## Digest of Far West Industrial Activity



by

*J. Reinhardt*

**San Francisco**—Preliminary estimates and forecasts for production of rolled steel in the seven western states for 1950 indicate a little less optimism than was shown about this time last year for 1949.

The eight producers of rolled products in the seven western states now estimate they will roll 2,847,000 net tons this year, whereas in January 1949 the same

### PRODUCTION OF ROLLED STEEL IN THE SEVEN WESTERN STATES

	(Net Tons)		
	As Forecast in January 1949 for the Year 1949	Actual 1949 Prod. (Part of December Estimated)	Actual 1948 Production
Plates . . . . .	925,000	948,964	914,497
Sheet and Strip . . . . .	303,000	332,500	275,483
Tinplate . . . . .	200,000	84,000	48,087
Buttwelded Pipe . . . . .	91,000	226,956	407,762
Standard Structural Shapes . . . . .	501,000	563,558	667,799
Hot-Rolled Bars and Small Shapes . . . . .	772,000	148,345	199,841
Wire Rods and Wire Products . . . . .	205,000	32,490	139,448
Miscellaneous . . . . .	18,000		
<b>Total Rolled Products . . . . .</b>	<b>3,015,000</b>	<b>2,376,813</b>	<b>2,652,917</b>

bia and the operation of Kaiser Steel's 86-in. mill which is scheduled to start within the next month or two.

A detailed breakdown by products to be rolled in 1950 in the seven western states will be published in this column next week. The accompanying table gives the breakdown of production in this area for 1948 and 1949 and the forecast made for 1949 early last January.

### Bethlehem's Plans Indefinite For Use of Openhearth Furnaces

**Los Angeles**—Status of the three openhearth furnaces of Bethlehem Pacific Coast Steel Corp.'s Los Angeles plant was the subject of considerable speculation as the company continued work on a new 75-ton electric furnace which will be placed in operation in the latter part of the first quarter or a little later.

### Will Keep Openhearth

If Bethlehem decides to place the aged openhearth into semi-retirement, it will save the cost of installing equipment to meet the L. A. County air pollution code, estimated at \$500,000. There are some who believe the electric furnaces, both of which will have smog preventing hoods and precipitators, will be used entirely as a substitute for the openhearth.

Those close to the scene, however, believe that Bethlehem will rely mainly on its new furnace and the 50-ton electric furnace which has been in operation for some time, but in addition will use the openhearth while the demand for steel continues high.

At any rate, it appears certain

group reported a rolling schedule totalling 3,015,000 net tons.

The estimated total for 1950 is approximately 470,000 tons greater than the 2,376,813 net tons actually produced in 1949.

### Will Increase Sheet Output

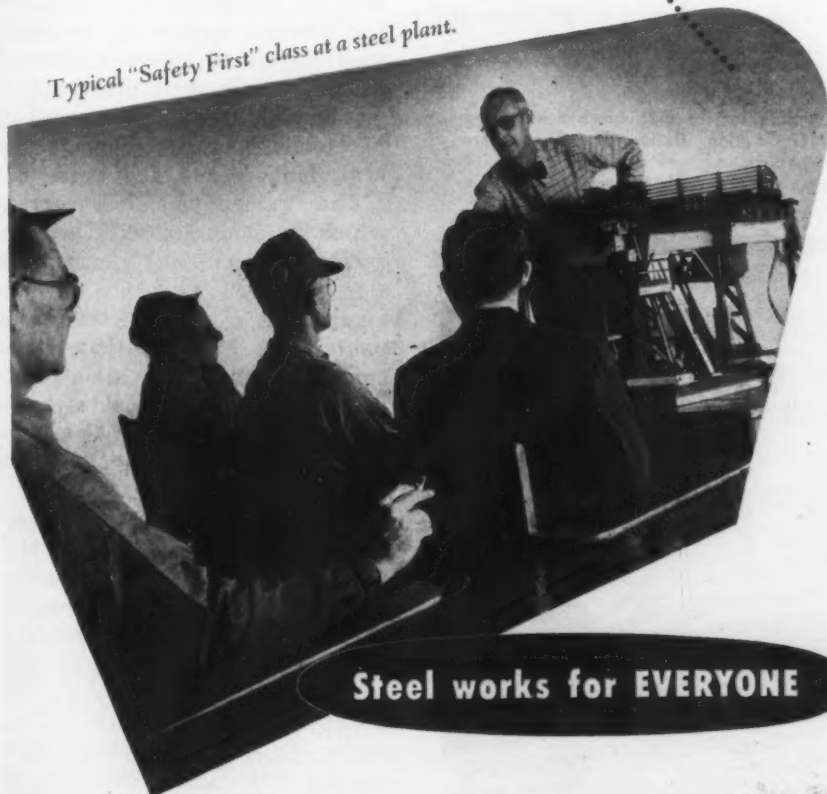
A study of the forecast thus far available shows that there will be a marked increase in production of sheet, strip and tinplate in 1950. Total production of these products is anticipated to be approximately 538,500 net tons, which is about 250,000 net tons greater than the actual 1949 production figures. Obviously this increase in these products reflects both improved operating rates at the Pittsburg, Calif., cold-rolling mill of Colum-



**"We Steel Workers  
have set a new  
Safety Record!"**



Typical "Safety First" class at a steel plant.



**Steel works for EVERYONE**

**So Says Charles Cochran**, steel worker in Ohio. And he is absolutely right. For in 1948, a year of high production, steel's "Safety First" record was less than six accidents for each million man hours of work. That safety record is twice as good as the average for all other industries combined.

Continuous plant-wide programs for safety training and education aided by better, safer equipment make steel working safe. In fact, the whole "Safety First" movement originated in the steel industry many years ago.

Steel men take pride in their skill and they are proud, too, of their safety record. They express this in greater production of quality steel . . . and all Americans benefit.

AMERICAN IRON AND STEEL INSTITUTE • 350 FIFTH AVENUE, NEW YORK 1, N. Y.

January 12, 1950

43

that Bethlehem will keep the openhearth at least on a standby basis. If it desires to operate both the openhearth and the electric furnaces, it again will face the air pollution problem. With only the two electric furnaces, capacity would be about the same as the present operation with the 50-ton electric and the three 50-ton slower openhearth.

The openhearth in question first were built when Bethlehem opened a plant in the Los Angeles area 31 years ago. Originally rated at 25 tons, they since have been enlarged to 50 tons.

The new electric furnace is expected to cost close to \$2,500,000. In addition, air cleaning equipment is being installed on the 50-ton electric furnace.

#### Installing Corrective Devices

In the only statement by company personnel, R. J. Treblay, general superintendent for Bethlehem, said:

"Our plans for the openhearth operations at the Los Angeles plant are indefinite."

Columbia Steel is planning to install corrective devices, mainly electrostatic precipitators, on its

openhearth. Kaiser Steel is outside Los Angeles County and not affected by the local laws.

In the deadlock between the gray iron foundries and the county air pollution board, most of the foundrymen still are looking for equipment which will meet the stringent county law.

The air pollution board has set Jan. 27 as the deadline for signing contracts. Most foundrymen are convinced that the board means business and are trying to find effective equipment hurriedly. Whether they will be able to locate acceptable equipment before the deadline remains open to question. Some sort of contracts probably will be signed, however, to save face for both sides. Otherwise, a legal battle seems likely.

#### California Aircraft Plant Dispersal Appears Unlikely

Los Angeles—Ever since the announcement of the atomic bomb, there has been considerable talk as to whether government defense measure would force the dispersal of southern California's giant aviation industry. At all times the dispersal has been denied.

The quiet development of guided missile work, however, has made it unlikely that any move will be made. The Navy is enlarging its testing facilities at Point Magu and Inyokern, and most of the equipment to be tested is turned out in southern California plants. Moving them would increase an already complicated transportation problems and would be damaging to southern California economy.

The plants not only employ thousands themselves but have hundreds of small subcontractors.

Robert Gross, president of Lockheed, confirmed the likelihood that all will stay here, for at least many years. He said he had asked officers of the Air Materiel Command if the Air Force is interested in having Lockheed make a proposal to take over a midwestern plant.

"The answer was a definite no," he said.

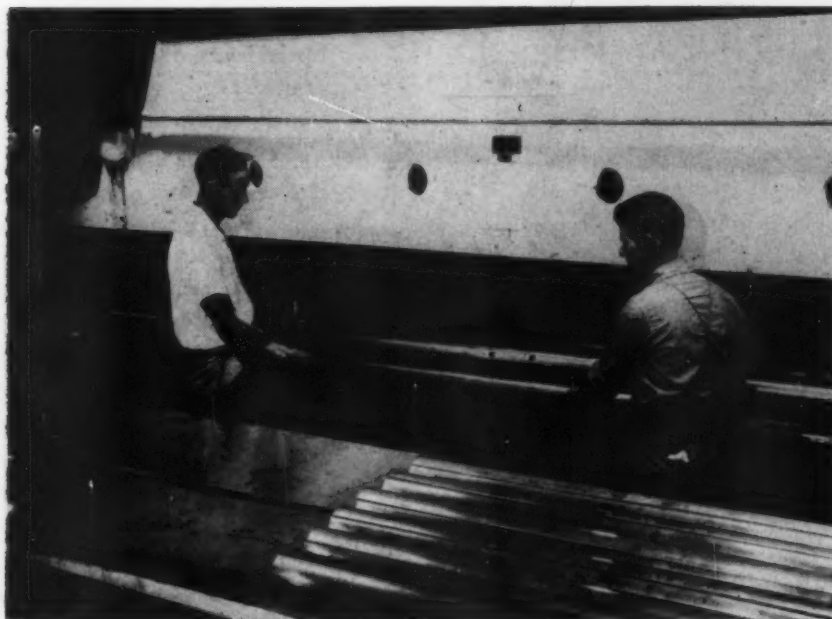
#### Conducting Experimental Work

In a recent official policy statement, the Air Force also said it has no plans for the dispersal of aircraft companies and considers the aircraft industries presently operating in southern California as reasonably well dispersed. It would take considerable numbers of atomic bombs to damage several plants in one large raid.

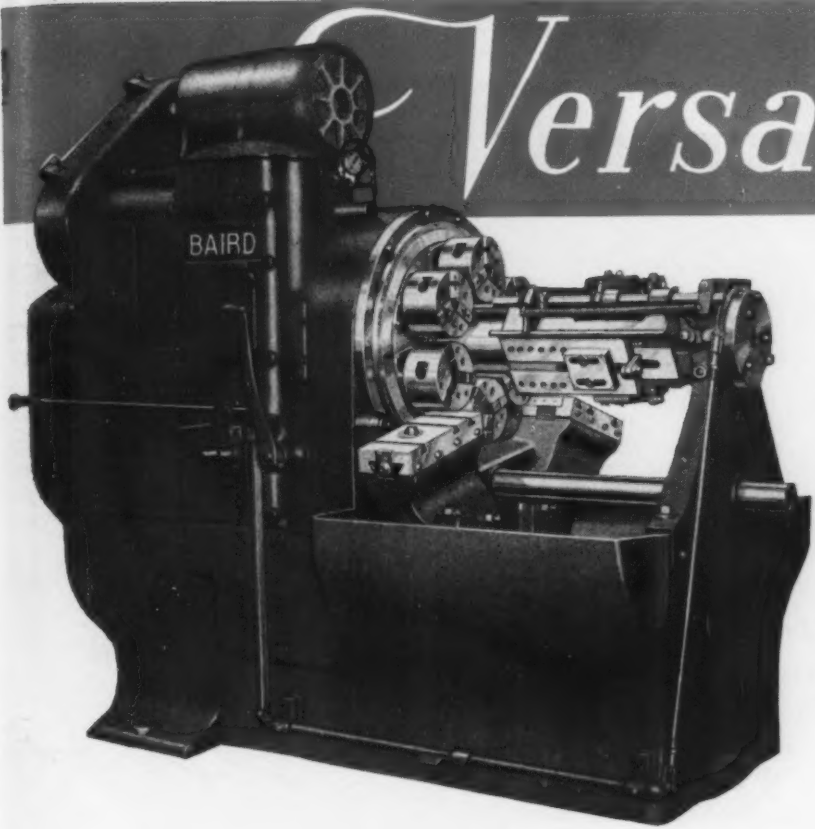
The guided missile program, which is conducted with wartime secrecy, is occupying a major portion of the engineering development staffs of most aircraft companies here. While all have plane contracts continuing, all also are doing missile experimental work. How much is being spent and how many persons are involved, the armed forces won't disclose.

Indications are that the work still is in the infant stage. "Missiles capable of flying 3000 to 5000 miles can be built, but will require a technical effort 'comparable to that expended on the atomic bomb,' according to Dr. William Bollay, technical director of the North American Aviation Aerophysics Laboratory. One missile, the "Wac Corporal," has reached an altitude of 250 miles.

**OPERATION ELIMINATED:** Aluminum alloy ducting for the B-36 bomber is formed on a power brake at Texas Engineering & Mfg. Co., Inc., Dallas. End flanges are pre-formed in the flat sheet, shown in the left background, and ride in a slot in the rubber brake pad during the main forming, thus eliminating a hand-forming operation previously required.



# Versatility!



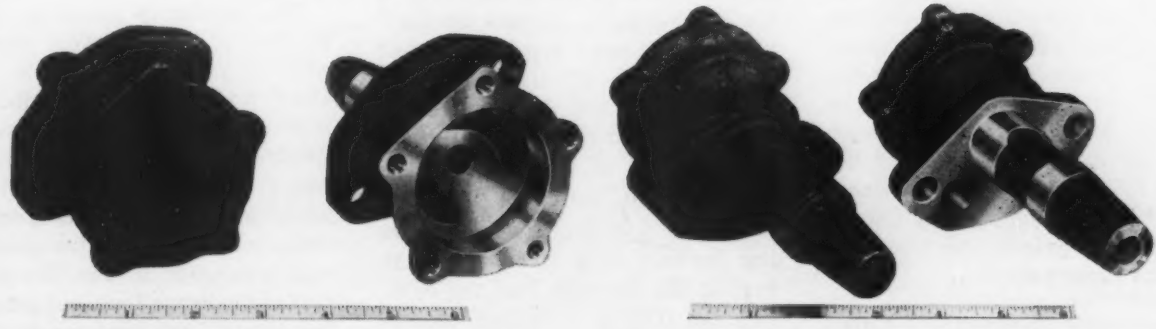
- ★ **TURN**
- ★ **BORE**
- ★ **FACE**
- ★ **GROOVE**
- ★ **DRILL** and
- ★ **TAP**

with the

## BAIRD 76H CHUCKING MACHINE-

This machine has independently operated tool slides, different speeds for the different spindles, automatic chucks, attachments or means to mill or cross mill, etc., etc.

### THE PART, A CAST IRON OIL PUMP BODY



**1st OPERATION**—Face flange, finish counter-bore I D and depth, cut groove in flange, drill and tap 5-29/64" holes.

308 pieces per hour, gross. Work is held stationary during drilling and tapping operations.

**2nd OPERATION**—Face and turn shank end, under cut spot drill and then drill center hole through to cored section, turn O D of shank, ream center hole, drill 2-15/32" holes.

222 pieces per hour, gross.

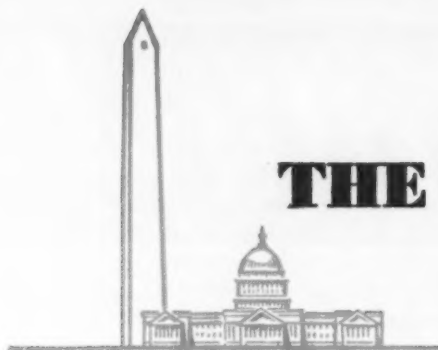
*Ask BAIRD About It!*



**The BAIRD MACHINE COMPANY, Stratford, Conn.**

AUTOMATIC MACHINE TOOLS • AUTOMATIC WIRE & RIBBON METAL FORMING MACHINES • AUTOMATIC PRESSSES • TUNNELING BARRELS, ETC.





## THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

**President's messages to Congress emphasizes a controlled economy . . . Proposals call for huge spending . . . Optimistic for the future . . . Number of strikes increase.**



by

*Eugene J. Hardy*

Washington — President Truman's recent major messages to Congress have been widely acclaimed as moderate and conciliatory. Maybe they are when considered in the light of past performances. Mr. Truman did drop his earlier advocacy of price and allocation controls, credit controls and substantially higher taxes, since they are not politically expedient in an election year. But he still failed to come to grips with the primary problem affecting the nation's economy, that is, continuation and expansion of huge federal spending programs and generally unsound fiscal policy.

### **Recommends Expenditure Cuts**

Earlier concern over multi-billion dollar deficits in the current and coming fiscal year was not evident in either the State of the Union or Economic messages. The budget estimate of \$42.4 billion for the fiscal year 1951, resulting in an additional \$5.1 billion deficit, makes Mr. Truman's pious pleas for cuts in expenditures sound just a little hollow. Apparently Mr. Truman still refuses to face up to the fact that unsound federal fiscal policies

can wreck the economy just as thoroughly and probably even faster than the system of creeping controls which he advocated only a year ago. Declaring that the state of the Union continues "good," Mr. Truman blandly ignored the prophecy of economic doom outlined in his whip-lashing address to Congress a year ago when he predicted that all sorts of disaster would descend upon the American economy if the Congress did not enact this program of controls.

Throughout both the State of the Union and Economic messages ran the very evident belief on the part of Mr. Truman that the economy can still be controlled, preferably by the government. The business down-turn of 1949 he attributes almost entirely to the failure of Congress to adopt his earlier measures to check inflation, and said that this could have been avoided and total output last year could have been \$10 to \$13 billion greater. The President claimed that government programs were of "tremendous benefit" in maintaining employment and purchasing power during the business down-turn. The ac-

tions of business in reducing inventories and refusing to curtail orders drastically while keeping their plants in operation was of secondary importance, according to Mr. Truman.

### **Calls for Enormous Outlays**

The legislative measures recommended in both of these messages were a reiteration of the "Fair Deal" program which the first session of the Democratic-controlled Congress refused to enact, and which the second session is not likely to approve to any great extent. These legislative proposals were presented by Mr. Truman in a most moderate tone, but none-the-less they all call for huge spending, controls on business and a general extension of the hand of the federal government into the private affairs of the American people.

They include: The Brannan farm program; expanded social security; middle-income housing; more public power, including the St. Lawrence Seaway project; more reclamation projects; national health insurance; aid to education; repeal of the Taft-Hartley Act; continued economic and military foreign aid;

# Kimpak\* Float Packaging



**ALUMINUM COOKING UTENSILS**  
Vita Craft Corporation, Kansas City

## Cuts shipping costs — reduces damage in transit!

For shipping anything from perishable foods to finely finished utensils and appliances, your best assurance of complete protection is KIMPAK\* creped wadding. Strong, yet soft—flexible, yet smooth—KIMPAK provides the perfect cushion to guard against finish damage.

Although a top quality packaging material, KIMPAK is economical to use. It's neat, easy to apply—saves time in the shipping room. It's clean and pleasant to handle. And KIMPAK is feather-light to reduce the size and weight of shipping packages. No other cushioning material

provides comparable safety with so little bulk or weight!

Moreover, the smart-looking, eye-appealing neatness of a KIMPAK-wrapped product cannot be surpassed. Many of America's finest products go to market protected with KIMPAK—because of its attractive appearance. So try "Float Packaging" at your first opportunity. There is a specification to meet every requirement of the four basic methods of Interior Packaging: Flotation, Blocking and Bracing, Surface Protection, and Absorbent Packaging.

# Kimpak

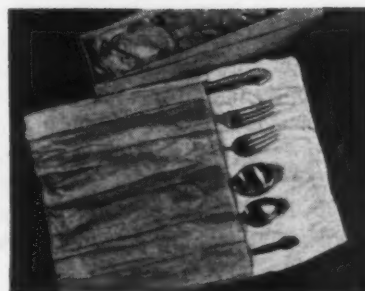
REG. U.S. PAT. OFF. & FOREIGN COUNTRIES



**CREPED WADDING**

\*T. M. REG. U. S. PAT. OFF.

January 12, 1950



**Individual Table Service**—in pocket envelope lined with KIMPAK.

Photo courtesy International Silver Company.



**Electric Waffle Iron**

Photo courtesy General Electric Company.

### —FREE BOOKLET!—

Kimberly-Clark Corporation  
Neenah, Wisconsin

Please send me free, the illustrated  
KIMPAK packaging guide.

IA-150

Name .....

Firm .....

Address .....

City ..... Zone ..... State .....

aid to underdeveloped areas; new anti-monopoly legislation; extension of selective service; ratification of the International Trade Organization charter; a National Science Foundation; civil rights legislation; extended loan authority for the RFC; consumer credit control; additional authority over bank reserves; and authority to regulate speculation on the commodity exchanges.

#### Optimistic for the Future

The moderation with which Mr. Truman's messages were generally credited is evident only in his discussion of taxes, for Mr. Truman finally recognized that high taxes can stifle business expansion and activity. His coming recommendations will call for only moderate increases in taxes rather than the \$4 billion boost advocated last year.

In general his Economic message was optimistic for the future, but prophesied an ever-expanding role for government. He called for continued economic growth with a \$300 billion annual output in 5 years. The goal he set for 1950 was

a reduction in unemployment by 1 to 1½ million, 61 million jobs, and an increase in output of 7 pct above 1949. Mr. Truman makes the point that everyone must work harder and that productivity must increase by 2 to 2½ pct a year, but he blandly ignores the fact that he has consistently backed the union philosophy of more pay for less work.

#### Welfare Programs Emphasized

Mr. Truman then re-echoes the philosophy which pervades the entire Economic message — federal fiscal policy must contribute to this economic growth. His welfare programs he terms "essential elements of our economic strength." He emphasizes that if these are not enacted we will "weaken some of the most important factors to an expanding economy." Again he ignores the fact that spending on such programs in the face of continued federal deficits can eventually destroy our economic system.

The remaining point in Mr. Truman's analysis of the needs for economic growth calls for continuing government aid to trouble spots

in the economy which he believes had so much to do with the rapid recovery from the business set-back of 1949. Taking a cue from the report of his Council of Economic Advisers which attacked the recent steel price rises, he also warned basic industries that there is no justification for further price boosts. In his judgment, such increases and unwise wage adjustments could rock the boat of economic expansion.

#### Basic Issues Unexplained

Greater business investment which has been falling off in recent months, Mr. Truman terms one the most "dynamic sources of expansion within the American economy." But he does not explain how the public can be expected to have any confidence in business investments in the face of his failure to cut federal expenditures and otherwise place the federal government on a sound financial base. In other words, Mr. Truman on one hand advocates huge federal spending programs which he terms "essential" and on the other hand pays lip-service to a balanced budget and debt reduction.

#### THE BULL OF THE WOODS

By J. R. Williams



#### Number of Strikes Increase

There are two major points of interest in the Bureau of Labor Statistics preliminary report on labor-management troubles in 1949. One is that wage issues are growing less dominant in such disputes and the other is that had it not been for the coal and steel strikes, the 1949 labor record would have been better than in 1948.

Statistically, preliminary estimates indicate a rise of 5 pct, from 3419 to 3600, in the total number of strikes—including all stoppages involving six or more workers. At the same time, total strike idleness increased by 50 pct from 34 million man-days to 53 million.

The 5 pct rise in the number of individual strikes is not particularly significant because the BLS includes in its computations all stoppages involving six or more workers.



## Blanking Sheet Metal Parts With Steel Cutting Rules



By E. Carpenter

Tool-Design Research Engineer,  
Boeing Airplane Co.,  
Seattle, Wash.

**SUMMARY:** The dinking die, or steel cutting rule such as used in the printing trade, has proved effective for the low cost blanking of aluminum, magnesium and stainless steel sheet metal shapes. Die construction, press methods, and applications of this cutting technique are described.

THE printer's steel cutting rule is proving effective in cutting aluminum and stainless steel stock as well as blanking costs, at Boeing Airplane Co. Functioning in a manner similar to that of a cookie cutter, the cutting rule has been adapted by many industries to many uses, such as cutting celluloid, corrugated box stock, rawhide, linoleum, fiber, wallboard, leather, and even wood. Boeing, however, is believed to be the first to use it for blanking operations on aluminum and stainless sheet metal parts.

To adapt the technique to sheet metal blanking, some changes had to be made in the steel

cutting rule. As used by printers, the rule is made of mild steel, bent to the desired shapes and then put to work without tempering. For sheet metal blanking, it was necessary to work out a suitable heat treatment, consisting of 5 min in a salt bath at 1450°F, a quench in oil, and a 15 min draw at 375°F. After this, the rule has a hardness of about 60 Rc, comparable to the hardness of a high speed drill.

The use of the cutting rule is quite simple for sheet metal. A pattern of the part to be cut is laid out on a 3/4-in. plywood board. This pattern is then jigsawed with a blade the exact width of

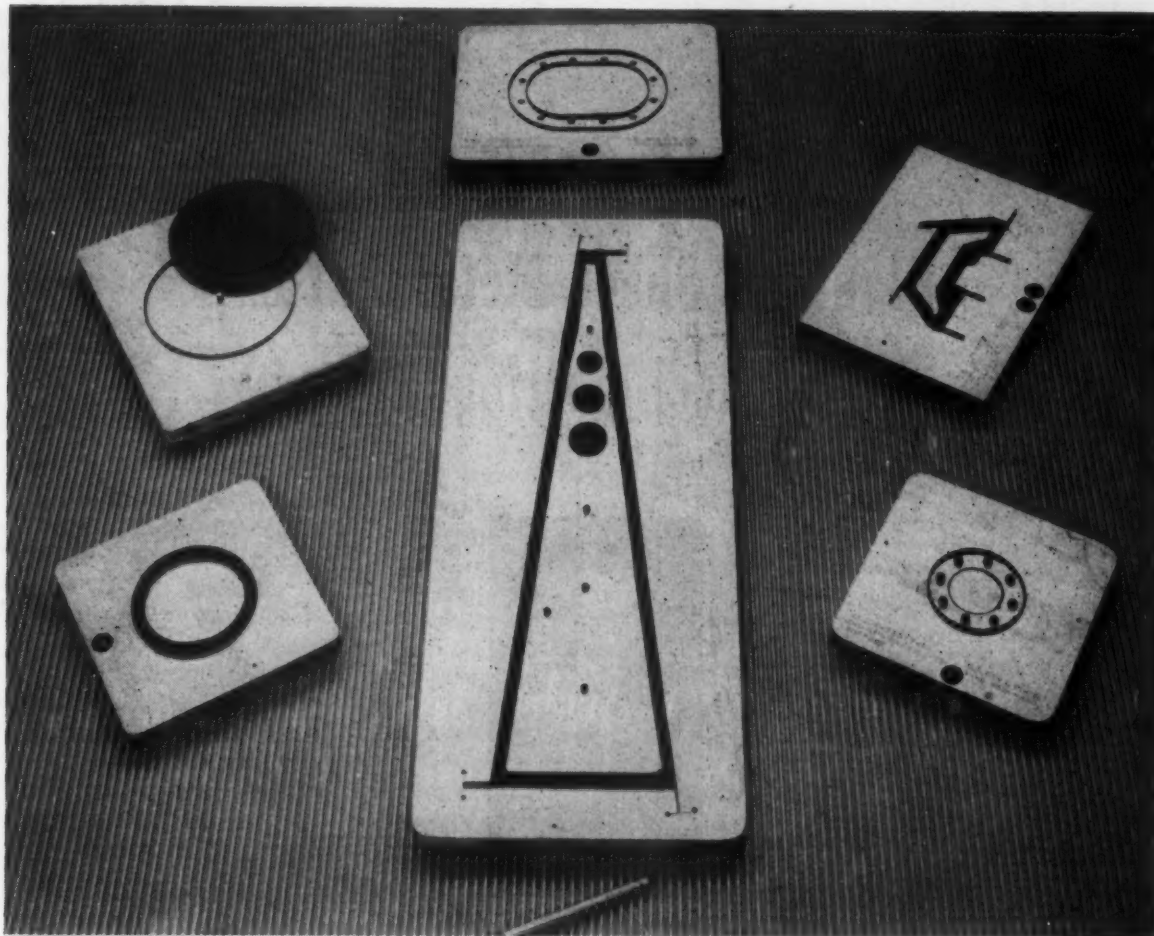


FIG. 1—Dinking dies, made with steel cutting rule, take on varied shapes and sizes when put to use cutting out aluminum and stainless steel parts for Boeing airplanes. Die construction is shown here, including the Neoprene cork push-out segments and the extension of the rule at the corners of odd shaped dies to eliminate dimpling.



FIG. 2—Mechanical presses are used with dinking dies, which are simple and require no alignment in the press. Parts break out clean and have nearly a 100 pct cut edge, requiring very little edge finishing.

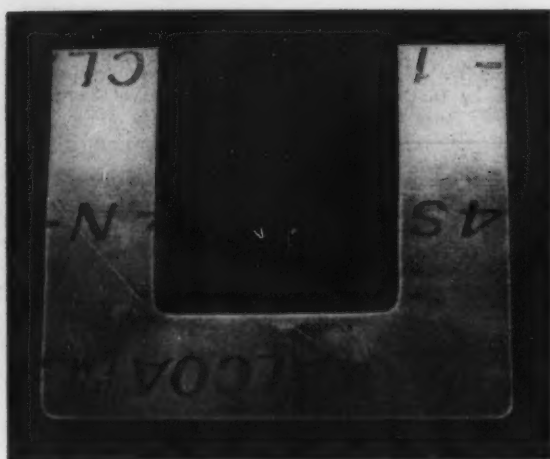


FIG. 3A—Production of this part totaled 2500 at a cost of 5¢ each. Comparisons of costs of production by other methods are shown in table I for this part.



FIG. 3C—Aircraft parts made by dinking dies are limited only in gage or stock, not in size or shape of the part. This is a typical part cut out of aluminum sheet, measuring roughly 7 x 11 in.

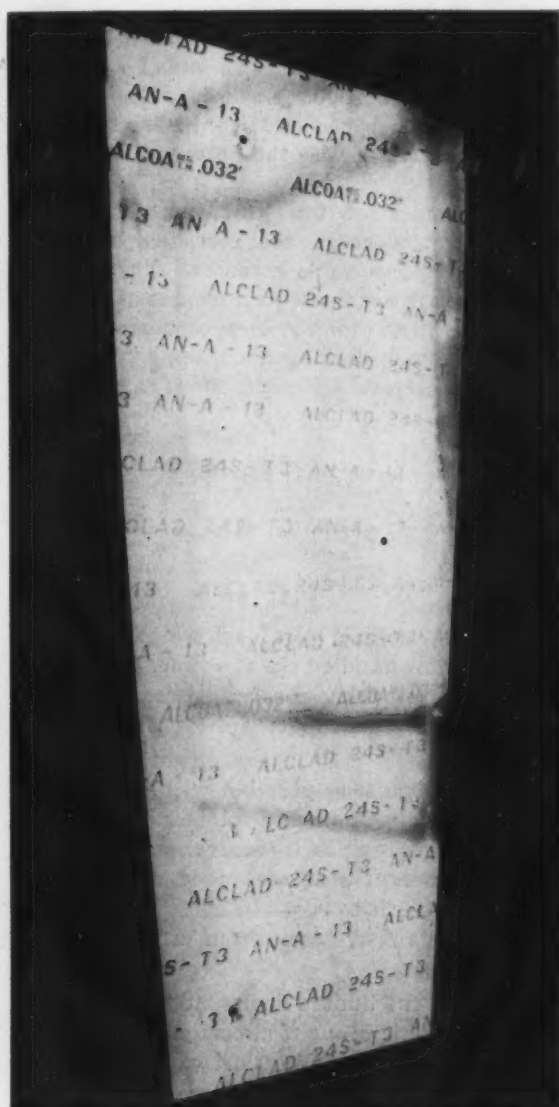


FIG. 3B—This part, measuring about 20 x 26 in., was cut in lots of 100 at a per part cost of \$1.08. Costs of producing the part by other methods are shown in table I.

the steel rule, but at the corners of the pattern the saw cuts are run out about  $\frac{3}{4}$  in.

A bending and forming machine such as used by printing houses is used to bend the pieces of untempered rule so they will fit precisely into the sawed pattern. The  $\frac{3}{4}$ -in. extensions at the corners are provided so that when the metal part is blanked, there will be no dimpling and the part will break out cleanly. After thus shaped, the pieces of rule are hardened and fitted into the jigsawed board to make a solid, compact assembly, or dinking die. Typical dies made in this way are shown in fig. 1.

Tests have proved these rules to be good for quantities in excess of 500 parts. Boeing has found it advisable to make enough rule assemblies to last through an entire order of parts to be cut.

The cutting edges of these rules, or dinking dies, extend above the face of the plywood board about 0.2 in. Neoprene cork of this thickness is glued alongside the inner cutting edges of the rule to serve as a push-out for the part after it is cut, as can be seen in fig. 1.

Use of the dinking die in any mechanical type press is simple. The plywood-die assembly is laid face up on a flat steel block on the press bed, and at each end of the block are fastened hard steel spacing bars exactly the height of the cutting rule. On the ram or the upper member of the press is another flat steel block. Raw stock to be blanked is laid face up on the dinking die. The ram of the press is then brought down and the part is cut out of the stock. Finished parts being removed from the press and die positions in the press are shown in fig. 2.

The dinking die system has several advantages in cutting duralumin, aluminum and stainless steel stock up to 0.040 in. thick, a range that encompasses a great variety of subassembly parts for aircraft. The greatest advantage is the accuracy which the dinking die carries within



itself. No time is required in die alignment in the press, one of the major cost items in using blanking dies, press plates, routing boards or standard tools. Also, except to install the flat steel blocks in the mechanical press, there is hardly any setup time.

Parts have been cut with dinking dies from sheet stock up to 0.064 and 0.080 in. thick, but this is unsatisfactory for any large production orders. The thicker gages are satisfactory if required in small lots of quite simple shapes. Typical parts made by the dinking die process are shown in fig. 3.

The type of edge a dinking die gives to a blanked part is another advantage. It cuts all the way through the stock. A slight shear occurs at the end of the cutting stroke, leaving a tiny lip of about 0.002 in., which is easily burred off. In using the blanking or press plate dies, the stock is cut one-sixth to one-half way through and the rest is sheared off. The resultant rough edge may require considerable finishing and smoothing.

At Boeing, dinking dies are made in the wood shop. About six dies of average shape and size can be made by two men in an 8-hr shift, whereas blanking dies to do the same job would require the work of two men for about five 8-hr shifts.

As previously stated, the dinking die has quite drastically reduced costs on the work to which it can be applied. Accountants at Boeing have figured closely the costs of various sizes and num-

TABLE I

Comparison of Blanked Sheet Metal Part Production Costs by Dinking Die Methods with Costs of Same Parts Produced by Other Methods

<b>A—For 500 parts, 12 x 18 in.:</b>	
Dinking Die .....	\$0.16 per part
Standard Tools:	
Three Setups .....	.20
Six Setups .....	.29
Routing .....	.31
Press Plate .....	.43
Blanking Die .....	.90
<b>B—For 2500 parts, 5 x 5 in., (See fig. 3A):</b>	
Dinking Die .....	\$0.05 per part
Standard Tools:	
Three Setups .....	.08
Six Setups .....	.12
Routing .....	.13
Press Plate .....	.08
Blanking Die .....	.12
<b>C—For 100 parts, 20 x 26 in., (See fig. 3B):</b>	
Dinking Die .....	\$1.00 per part
Standard Tools:	
Three Setups .....	.96
Six Setups .....	1.19
Routing .....	1.21
Press Plate .....	3.10
Blanking Die .....	6.38

bers of parts made by the several different methods of manufacture. Their data tell how much it would cost using any of the normal forming methods to produce parts in lots of 1, 10, 50, 100, 500, 1000 or 2500. Generally, the "cookie cutter" technique comes off with the lowest costs, but even when it doesn't the difference has been very small.

Table I lists a few total cost comparisons, including labor, overhead, tool cost, template cost and all other conceivable expenses. The cutting rule has been in use for several months at Boeing, with nearly 300 dinking dies constructed and used. With each dinking die making from several score to several thousand parts, savings are considerable.

## Fork-Ram Truck

### SPEEDS WIRE HANDLING

A THREE-FOLD advantage resulting from the use of a fork truck was realized almost immediately following its installation in the plant of Johnson Steel & Wire Co., Akron, Ohio. The benefits realized are in each of three major industrial handling operations. Handling costs in receiving them have been cut from approximately \$17 to \$1.40 in the unloading of boxcars; the on schedule movement through production has been a major factor in making possible a doubled production output; and existing storage capacity has been increased 40 to 50 pct.

Considerable quantities of wire are handled daily. The greatest majority of the semifinished wire is received in boxcars, the remainder arriving by highway truck. A Baker 3000-lb capacity fork truck, with its forks brought together to form a ram, unloads and stores coils of the incoming wire in 45 to 60 min. When this operation was performed manually, it took four men working 4 to 5 hr to do the job with hand

trucks. These coils of wire, each weighing about 300 lb, are now handled six at a time. The truck also permits stacking the coils two and three high, increasing the capacity of existing storage facilities.

Another advantage possible with the use of the trucks is that boxcars can be unloaded almost immediately upon its arrival at the siding. This is important since extended exposure of the wire causes it to rust. In addition, it is not necessary to remove men from other tasks to unload the car.

Because of the limited floor space in the drawing dept., wire is brought almost as it is needed by the draw benches. Wire delivery to the machines had been with hand trucks which, because of the slowness, deprived the operators of the benefits of an incentive wage system. With the aid of this single truck, production of the entire plant has been increased.

# Metallizing

## For corrosive prevention

**SUMMARY:** Metallizing, which has no practical limitations in the thickness of coating that can be applied, offers advantages in corrosion prevention. The author describes the characteristics of zinc and aluminum sprayed coatings and cites examples of the use of these coatings on specific products. He also touches on a new technique of applying a composite coating that is fused after spraying to give a nonporous coating.



By **JOHN E. WAKEFIELD**

New York

**I**N spite of continual improvement in paints and other organic coatings, corrosion of iron and steel equipment is a major industrial problem. Metallizing offers a solution to many corrosion problems. The same guns commonly used to rebuild worn machine parts will spray zinc, aluminum and other protective coatings. These metals can be applied to tanks, fans, refrigeration equipment, structural steel and other products.

Metallizing's most important advantage is its ability to apply heavy coatings. Where plating, dipping and similar processes are generally limited to a few thousandths, either physically or

economically, sprayed metal coatings are often 0.015 to 0.020 in. thick. They can be made still heavier on special sections where corrosion is most severe.

On many products and structures, heavy coatings cost less over the life of the product. Obviously, a thin coating costs less initially, but that does not mean low-cost protection. After a few years, the cost of another coating must be added, plus the frequent lost production of equipment out of service. Quite a number of sprayed metal coatings have been in service for 15 to 20 years, and are still in excellent condition.

Sprayed metals provide an excellent base for

paints where required for appearance. There is no flux or scale to interfere, and the coatings have a texture comparable with that of a fine sand casting. Paint, applied over sprayed zinc or aluminum, has lasted more than three times as long as the same paint applied directly over steel surfaces.

Some of the sprayed metals, as zinc and aluminum, provide electrochemical as well as physical protection. This is an advantage not confined to metallizing, but is a characteristic of the metals themselves.

Metallizing is flexible and adaptable to many circumstances. Guns can be mounted for continuous operation in a fixed position, or can be carried to the work and used by hand. Hence, products that lend themselves to mass production methods on conveyor lines can be metallized. At the same time, existing structures can be cleaned and given a protective metallic coating.

While this sums up the advantages in metallizing in the field of corrosion prevention, a comparison with one or two other common pro-

tective processes may demonstrate some of the points more clearly. Metallizing is not in competition with hot dip galvanizing and painting. All three have their places in industry and can help each other.

Since zinc is the metal used in hot dip galvanizing, the immediate discussion of metallizing is limited to zinc. Consequently, a comparison can be made between the two types of coatings as to (1) life expectancy; (2) initial cost; and (3) as a base for paint.

Through the work of the American Iron & Steel Institute and others, it is known that the life of any zinc coating is in direct relation to its thickness. The heavier the coating, the longer it will give effective protection. Hence, metallizing has a distinct edge in life expectancy.

According to recognized authorities on hot dip galvanizing, such coatings when properly applied, are limited to 0.0025 to 0.003 in. max. By cooling the bath of molten zinc, it is physically possible to apply a heavier coating, but the results are not good. First, coatings become lumpy and brittle. Second, they are poorly bonded to the base, and chip off easily.

When it is recognized that, in proper hot dip galvanizing technique, the thickness of coating is limited to 0.003 in., and that sprayed zinc has



FIG. 1—Metallizing provides an economical method of regaining the necessary corrosion resistance along the weld areas in producing galvanized steel barrels.



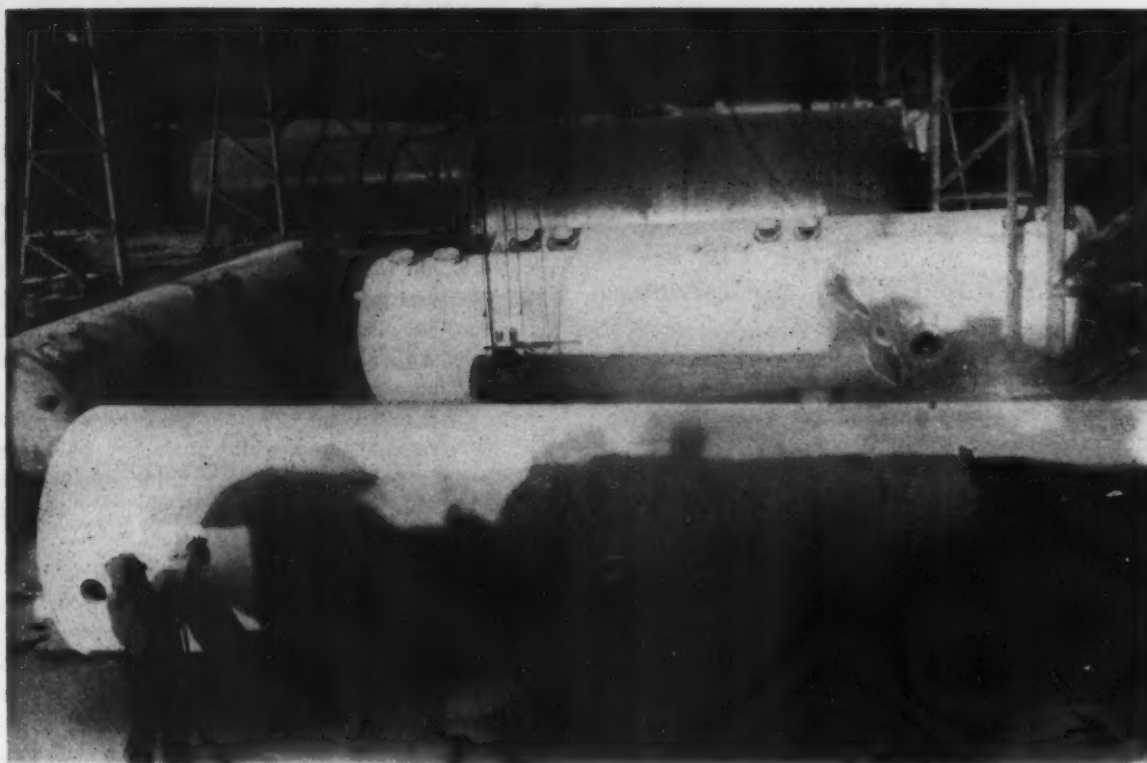


FIG. 2—Sixteen glycerin storage tanks were metallized with zinc, inside and outside. The tanks, 78 in. ID x 32 ft long, were sprayed to a thickness of 0.003 in. on the outside and 0.006 to 0.008 in. on the inside.

no practical limit, it becomes obvious that heavy sprayed metal coatings can provide much longer protection. Citing the American Iron & Steel Institute again, it is also obvious that 0.015 in. of sprayed zinc will last just about five times as long as a 0.003 in. hot dip galvanized coat.

When it comes to initial cost, galvanizing usually has the advantage, although comparisons are difficult on many products. Galvanizing cost is based on so much a pound of the base material. Metallizing is estimated on a square foot basis. Galvanizing of small, light-weight products is quite inexpensive. On larger, heavier parts, metallizing is usually competitive. For example, 1 sq ft of 18 gage steel weighs very little. It contains 2 sq ft of surface. Galvanizing would cost much less. 1 sq ft of 1 in. steel plate would be quite another story. It weighs many times as much as the other piece, yet still contains little more than 2 sq ft of surface. Zinc metallizing would be less expensive.

Service life must be reconciled with initial cost, and each case must be studied individually. In general, if a few years protection is considered adequate and the initial cost must be kept very low, galvanizing would be the answer. On the other hand, if long-term protection is required and the cost of protection can be figured realistically over the life, sprayed zinc would be most economical.

As a base for paint, metallizing has much to offer. Hot dip galvanized coatings must be

cleaned in solutions or special primers must be used, because of flux and scale. Paints can be applied directly over sprayed zinc without cleaning or special primers.

On welded structures and equipment, both processes can often be used to advantage. Sections may be hot dipped before assembly. Where the zinc is burned off by subsequent welding operations, it can be replaced with the metallizing. This is done already on many products such as the steel barrels shown in fig. 1. These are made of galvanized sheet, with welded seams. A heating element moves along the seam with the metallizing gun, and the zinc is automatically replaced. On structures such as tanks, bridges, dam gates, degreasers and many others, galvanizing is out of the question once the equipment is erected. Metallizing is carried to the work.

There is really no significant cost comparison between paints and sprayed metals. Paints are often required for appearance as well as for protection. A good paint job costs less than sprayed zinc or aluminum initially, but lasts a much shorter time.

Sprayed zinc or aluminum coatings can be thinner where paints will be used over them. They make an excellent base for the paint, and prevent corrosion of the steel even where the paint may chip, peel, become porous or otherwise damaged. Paint over sprayed metal on a riser pipe at Riverhead, Long Island, N. Y., began to peel after 9 years, and there was still

no attack on the steel pipe. Paint, applied directly to the steel before the metallizing work was contemplated, began to peel after about 2½ years and there was measurable loss of steel in that time.

Again, sprayed zinc and aluminum give electrochemical protection to the steel as well as physical protection. That is why the microscopic pores in sprayed zinc and aluminum are of no consequence. The two metals sacrifice themselves in the presence of steel and tend to seal themselves.

Specific cases where metallizing has been and is used successfully for corrosion protection fall into two broad groups: (1) Existing structures, and (2) product protection.

The term *existing structures* is used to denote any piece of equipment or type of product already in use, from ocean going ships to pole line hardware. Water storage and other kinds of tanks have been metallized during the past 20 years with excellent results. Two reasons for metallizing such equipment are to prevent corrosion and the eventual destruction of the equipment, and to prevent contamination of the liquids stored in the tank or tanks. Fig. 2 illustrates both purposes.

The tanks shown are part of a group of 16 glycerin storage tanks being metallized with zinc. The 78 in., ID, by 32 ft long tanks were sprayed to a thickness of 0.003 in. on the outside to withstand atmospheric corrosion. The insides were sprayed with 0.006 to 0.008 in. to prevent contamination and discoloration of the glycerin from the steel. This work was done by Metalweld, Inc., Philadelphia.

The Bureau of Water, Erie, Pa., has had excellent results on wash water tanks of 110,000 gal capacity, and on filter troughs at their West Filtration Plant. Southern Counties Gas Co., Los Angeles, reports many years protection on butane storage tanks subjected to salt atmospheres mixed with acid fumes from refineries nearby. Some of their work, on gas pipe lines, was done as early as 1932.

Many sections of air conditioning equipment are subjected to moist air, water, and often industrial atmospheres. Cathodic protection and inhibitors are a partial answer, but metallized zinc or aluminum can be of real assistance. All three methods of corrosion prevention can be used to advantage, and will complement each other.

A railroad bridge on which deck girders were badly corroded from brine and stock car drippings was metallized with 0.010 in. of zinc in 1936. Corrosion has stopped, and the danger of seriously weakening the structural members has been eliminated. Several railroads have done

similar work on bridges where corrosion was a constant problem.

Metallizing should be considered in the design and production stages of manufacture. Quite a number of products are being metallized with zinc or aluminum already. Westinghouse has zinc sprayed outdoor hanger-type capacitors. A recent advertisement on the capacitor clearly summed up the advantages of metallizing, stating: "A zinc coating, five to six times the thickness of hot dip galvanizing, provides a strong, durable finish that gives effective protection against rust and atmospheric corrosion. This new finish also has greater resistance to any abrasion encountered while units are being installed on poles. Even if scratches penetrate through the zinc coating, the zinc provides cathodic action to protect the steel."

Principal manufacturers of vapor degreasers also use metallized zinc for protection. The solvents used in these degreasers are basically trichlorethylene and non-corrosive. However, the solvents clean the steel in the tanks so thoroughly that it is subjected to rusting from atmospheric corrosion and to the effects of acids in the oils and greases removed from the products being cleaned. Galvanizing is used on smaller degreasers that can be hot-dipped after fabrication. Larger ones are zinc sprayed after fabrication, rather than fabricating with galvanized sheet that might be damaged by welding. Fig. 3 shows a conveyer-type degreaser used for cleaning 15 ft aluminum sheets. The interior has been zinc sprayed.

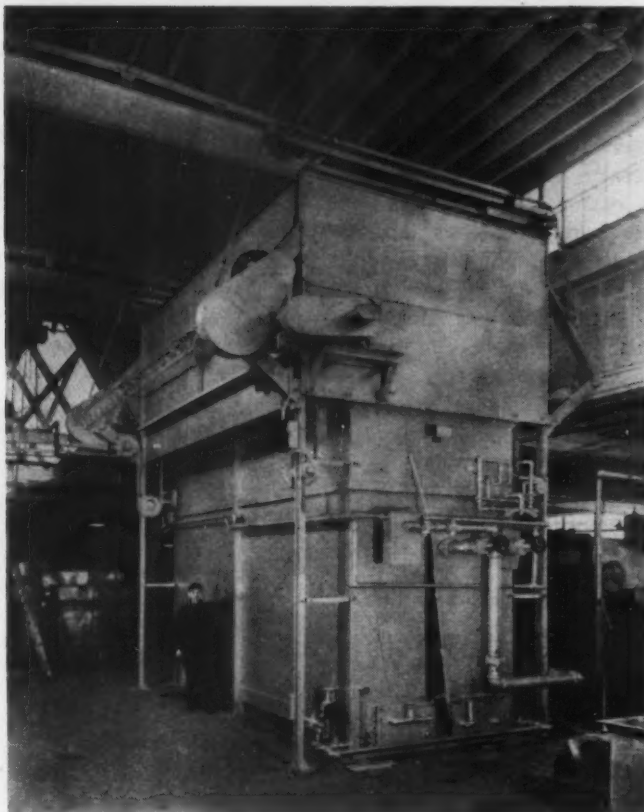
#### Metallizing Applications

Several manufacturers of refrigerator units and ice cream cabinets are using sprayed zinc to advantage in their products as shown in fig. 4. These are Stangard patented prime surface cold plates used in farm and home freezer units. Metallized zinc gives long life protection to the entire exposed surface.

Another manufacturer of refrigerated truck plates of various sizes and shapes handles them on a semi-production basis. Hung on hooks from an overhead conveyer line, the flat and U-shaped plates pass through a sand blast unit, where they are blasted with angular steel grit, and out into the metallizing station. A hand gun coats them quickly.

Metallizing of pole line hardware is an application not now being carried out, but which suggests possibilities for metallizing on smaller products. Corrosion from salt atmosphere along the seaboard has forced several manufacturers of pole line hardware to bring out a stainless steel line. Their regular galvanized fittings are satisfactory in inland areas. Metallizing with a zinc coating might well be a happy compromise between the high cost of stainless steel and the added protection needed for coastal atmospheres.

FIG. 3 — Large vapor degreasers are sprayed after construction while smaller ones are often hot-dip galvanized after fabrication. This conveyor-type degreaser used for cleaning 15 ft aluminum sheets was sprayed with zinc on all interior surfaces to prevent atmospheric corrosion.



Metallizing is also quite useful in combating heat oxidation. Salt pots, annealing covers, pyrometer tubes and similar products are often made from steel and metallized. The process is often a compromise between the high cost of special alloy equipment and the much too short life where straight steel is used. Metallizing adds 10 pct to 50 pct to the original cost, but increases service life 5 to 20 times or more. Either aluminum or special nickel-chrome alloys are used for heat resistance.

Pressure blasting with sand, Joplin grit, or angular steel grit will properly prepare surfaces for protective coatings. For production work and other places where the abrasive can be recovered and used again, steel grit is recommended. On most existing structures and some plant equipment, the abrasive cannot be recovered. Here, sand is suitable, provided it is a good grade of hard (silica or flint) angular washed sand of 16 to 20 mesh size. Joplin grit should be of a comparable size, and the best sizes of angular steel grit are G-16 to G-25.

Regardless of abrasive selected, blasting should be continued until the surface is thoroughly clean. No rust spots or mill scale should remain, and no dark spots should show. The surface should have a uniformly dull gray appearance.

It is important to apply the coating as soon after preparation as possible, certainly within 4 hr. For that reason, it is advisable on large structures to blast a limited section, spray it, and then proceed to another similar section. On

smaller equipment, of course, all blasting can be completed before spraying.

Generally speaking, the larger the grit size, the stronger the bond for the coating. On the other hand, the larger the grit size, the slower the blasting will proceed. Therefore, it is advisable to use the smallest size that will provide a good bond for the coating.

Coatings of 0.012 in. and heavier need a stronger bond. Similarly, all aluminum coatings, except very thin ones, need a stronger bond than zinc. Aluminum tends to shrink rapidly as it cools, setting up greater stresses within the coating than zinc.

While there is no substitute for proper preparation, there are times when smaller grit sizes can be used and the bond strength increased by a fairly recent discovery. A thin coat, 0.0015 to 0.002 in. of sprayed steel, applied before the protective metal, will increase the bond strength. This so-called *steel flash undercoat* is good practice where aluminum is used in thicknesses of 0.008 in. or more. It is also recommended where the protective coating will be entirely or largely immersed in liquid. Storage tanks are a good example, or ship hulls, piers, filter beds, water wash units, etc.

Often the value of a process can be better understood from a knowledge of what it won't do as well as what it will accomplish. Metallizing, like all other processes, has limitations. Practically speaking, metallizing is limited in the corrosion prevention field to those metals that are anodic to iron and steel. That means zinc,



aluminum and cadmium, though the last named is generally too expensive for heavy coatings.

The reason for this limitation is that all sprayed metal coatings are to some extent porous. In zinc, aluminum and cadmium, however, the metal coating is sacrificed and the pores tend to seal themselves. Hence, porosity is of no consequence. However, with metals that are

A few instances have been reported where metals such as 18-8 stainless steel, nickel, Monel and Nichrome have been applied and effectively sealed with raw tung oil or either raw or boiled linseed oil, mixed with 5 per cent by volume of cobalt liquid drier. The problem is to find a sealer, which, in itself, will stand the corrosive action.

This limitation is the major one for metallizing. It naturally leads to the following questions when trying to decide whether metallizing will solve the problem or not:

FIG. 4—Manufacturers of refrigerator units are turning to sprayed zinc for corrosion resistance. These cold plates used for home and farm freezer units are being zinc sprayed.



cathodic to iron and steel, the pores must be sealed or the coating will accelerate the corrosive action on the base.

Tin, which is cathodic, and lead, which is relatively inert, can be effectively sealed by mechanical means, so that they will give physical protection. Procedure is to apply the *steel flash undercoat*, then 0.020 to 0.030 in. of the tin or lead coating (0.030 in. minimum for lead) should be applied, followed by a shot blasting of the coating. No. 16 round steel shot should be used, with air pressures reduced to 35 to 50 psi on the blast machine.

TABLE I

Life Expectancy of Metallized Coatings\*  
Thickness of Coating Required, in Inches.

Corrosive Condition	5 to 10 Years	10 to 20 Years	20 to 40 Years	Over 40 Years
Rural Atmosphere	.....	0.003 to 0.005, Zinc	0.005 to 0.007, Zinc	0.010 to 0.012, Zinc
Industrial Atmosphere	.....	0.006 to 0.008, Aluminum 0.006 to 0.008, Zinc	0.010 to 0.012, Aluminum 0.012 to 0.015, Zinc	0.012 to 0.015, Aluminum 0.014 to 0.016, Zinc
Salt Atmosphere	0.006 to 0.008, Aluminum	0.008 to 0.010, Aluminum 0.010 to 0.012, Zinc	0.010 to 0.012, Aluminum 0.012 to 0.015, Zinc	0.012 to 0.015, Aluminum 0.014 to 0.016, Zinc
Fresh Water Immersion	0.006 to 0.008, Zinc 0.006 to 0.008, Aluminum	0.010 to 0.012, Zinc 0.008 to 0.010, Aluminum	0.012 to 0.015, Zinc 0.012 to 0.015, Aluminum	..... .....
Salt Water Immersion	0.010 to 0.012, Zinc	0.014 to 0.016, Zinc	.....	.....

\* In all cases it is assumed that no paint is required for appearance and that no maintenance will be necessary. If painting is required, metallized coatings provide an excellent paint bond and prevent corrosion under the paint.

(1) Will zinc or aluminum stand the conditions involved?

(2) If not, will tin or lead be adequate?

(3) If not, is there a suitable sealer that could be used in conjunction with 18-8 stainless steel, Monel or nickel?

(4) If the answer is "no" to all of the above, will the part or product stand heat treatment at 1950° F?

The fourth question relates to a recent development not previously discussed. It has been found that composite coatings of a highly corrosion-resistant hard-facing material known as Metco-Weld H can be applied in alternate layers with 18-8 stainless steel, Monel or nickel. The composite coating is then fused at 1950° F, with a torch, in a furnace or by induction. The result is a non-porous coating actually welded to the base.

The limitation is whether the part or product will be seriously distorted or damaged by the high temperature of fusing. Heavy sections and heavy-walled vessels in many cases will not be seriously affected, because the highest temperatures will exist only at the surface.

Actual metallizing applications in service for many years; a large number of test samples exposed to various conditions; and innumerable laboratory accelerated tests furnish the basis for predicting the life expectancies shown in table I. The figures are based on average commercial spraying, and are considered conservative.

# ***Reducing Handling Time in Jig and Fixture Setups***



**By Robert Mawson**  
Providence, R. I.

**SUMMARY:** By using a double casting of a machine detail and completely machining it before cutting it apart, the non-productive time in a cutting-cycle was greatly reduced. Details of the part, the drilling jig and milling fixture are described in this article.

**W**HEN designing special tools for machining a detail, it is advisable to have the percentage of non-productive time as low as possible. This lost or non-productive time in a machining cycle is the machine loading and unloading time, when no work is being performed on the piece. In short, it is the work handling time.

Fig. 1 shows a cast iron shifting crank, a part used on lathes built by the Rockford Machine Tool Co., Rockford, Ill. When designing this crank, to provide better clamping, simpler tooling, and lower machining cost, the detail was made as a double casting. This procedure permitted fixtur-

ing, drilling, reaming and milling the two parts as a single unit. The sequence of operation in machining the piece is: (1) Drill, ream and tap; (2) straddle mill and saw; (3) keyseat; (4) inspect; and (5) paint. Two fixtures for the first two operations were designed to handle the double casting.

The drill jig used in performing the first operation is shown in fig. 2. It is of plate construction, with two cold rolled steel side plates (1),  $\frac{5}{8}$  x 4 x  $7\frac{3}{8}$  in., welded to an end plate (2) that is  $\frac{5}{8}$  x 4 x  $10\frac{1}{2}$  in. Two workpiece locating members are each made from four pieces of cold rolled steel (3), (4) and (5). These sections are ma-

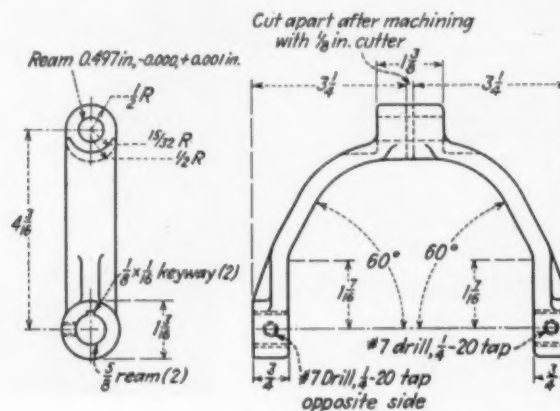
chined to the shapes shown in the illustrations and then welded to make a locating V-block. The assemblies are next welded to the side plates, one on the right and the other on the left of the drill jig.

The bushing plate (6) is made from cold rolled steel and welded to the end plate (2). The projecting end of the bushing plate is machined to the shape shown. A stop-screw block (7) is welded to the end plate, and two stop screw blocks (8) are welded to the jig, one to the right and the

To use the drill jig, details (9) and (14) are screwed back and one of the shifting cranks is placed in the jig. The stop screw (9) and positioning screw (14) are tightened against the workpiece, which moves it into machining position. The various holes can then be drilled and reamed in the workpiece and the several tools are guided through the jig bushings in the conventional manner.

To remove the finish-machined workpiece, it is necessary only to screw back the top and positioning screws. The two small holes drilled with a No. 7 drill are then tapped with  $\frac{1}{4}$ -20 threads. This tool locates the workpiece accurately and holds it securely with only the manipulation of

FIG. 1—A shifting crank detail is cast double so that it can be machined as a single unit, thereby reducing the non-productive machine cycle time.



other to the left of the V-plate assemblies. The left stop screw block (8) is drilled and tapped for a knurled head screw (9).

To the end plate (2) are welded four steel leg blocks (10), two on each outer face of the plate. Four steel leg blocks (11) are welded to the lower end of the side plates (1), two on the front and two on the rear faces. After the jig has been assembled, the leg blocks are ground to have parallel surfaces on outside faces.

Five socket head screws (13) are placed in the jig, four in the V-block assemblies and one in the stop screw block (7). Each screw is provided with a jam nut (12) to hold the screw after it has been adjusted to position. At an angle of 20° is located a knurled head workpiece positioning screw (14). In the V-plate assemblies are accurately located two hardened and ground tool steel bushings. Correctly placed in the two side plates are two tool steel liner bushings (16) and to be a good sliding fit are provided two hardened and ground tool steel bushings, one for the 39/64 in. drill and the other to guide the 5/8 in. reamer.

In the bushing plate (6) is located a tool steel liner bushing (17). In this liner bushing is placed, with a good sliding fit, a bushing to guide the 31/64 in. drill and a second bushing for the 1/2 in. reamer.

two easily and quickly operated jig details.

The next operation, straddle milling and sawing, is performed in another fixture, shown in detail in fig. 3. This fixture is made up from a cold rolled steel base (1) 1 x 6 x 14 1/8 in. In the base is machined a slot at each end for bolts to hold the fixture on the milling machine table. Two steel keys to fit the table slots are fastened in the machined slot in the fixture base with socket head screws. To the fixture base are welded four steel locating blocks (2) and (3), two at each position.

In reamed holes in the blocks (2) are hardened, knurled head, steel pins (4) with a ground portion to be a good sliding fit in the 5/8 in. reamed holes in the shifting crank workpiece. Two knurled head steel pins (5) are placed in reamed holes in the blocks (3), with each pin provided with a ground portion to have a good sliding fit in the 0.497 in. hole in the workpiece.

On the left end of the fixture base is welded a steel locating block (6). In this block is accurately drilled and reamed a hole in alignment with the pins (4). A 3/16 in. hardened tool steel pin (7) is driven into the machined hole in the block. In the base are accurately drilled and reamed four holes, into which are driven hardened tool steel clamp pins (8), (9), two at each



position. The workpiece clamping devices (10), (11), two of each, are made of cold rolled steel of welded construction.

Carefully positioned holes are drilled and then tapped for four clamp studs (12). Two of these studs are for the clamp (10) and two for clamp (11). Each stud is provided with a steel washer (13), a jam nut (14), and a spring (15).

To use the milling fixture, it is first located on the machine with the two steel keys that fit into the table slots. Nuts on the two T-head bolts, fitting the table slot and through the openings of the fixture base, are then tightened to hold the fixture securely in place. A gang of milling cutters, consisting of two side mills and a  $\frac{1}{8}$  in. saw, correctly spaced, is fastened to the machine in the conventional manner. The position of these cutters over the fixture is shown in phantom in fig. 3.

The nuts on the four clamps are screwed out to enable the clamps to be moved into a free posi-

tion. Then a shifting crank to be machined is placed in the fixture, being located by the pin (7) fitting the  $\frac{1}{4}$ -20 tapped hole in the boss of the workpiece. The position of the crank in the fixture is shown in fig. 3. The four locating pins (4) and (5) are next placed into the  $\frac{5}{8}$  in. and 0.497 in. reamed holes in the crank, which accurately locates the work. The four clamps are next moved over the workpiece and when the clamp nuts are tightened, the piece is accurately located and securely held.

The milling machine is then started and as the table feeds under the revolving cutters, the two bosses of the workpiece are faced and the casting is cut in half to form two details. To remove the finished machined workpiece, it is necessary only to screw back the nuts on the four clamp studs. The springs raise the clamps, which can then be moved back from the machining position. The workpiece is thus freed and can be lifted from the locating pin (7).

With this interesting fixture design, it is possible to machine two pieces with the lost or unproductive time that would be required normally for a single part. Therefore, the procedure may well be considered efficient machine and tool designing.

FIG. 2—This jig was designed to permit drilling two crank details simultaneously. Details are explained in the text.

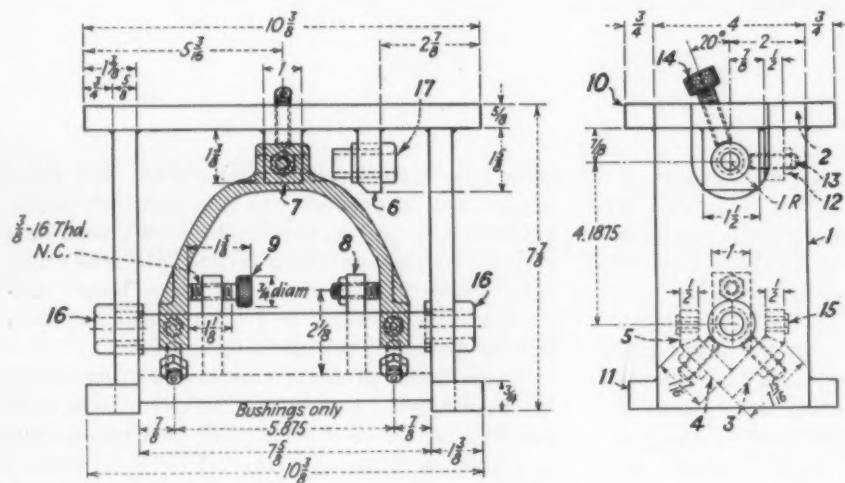
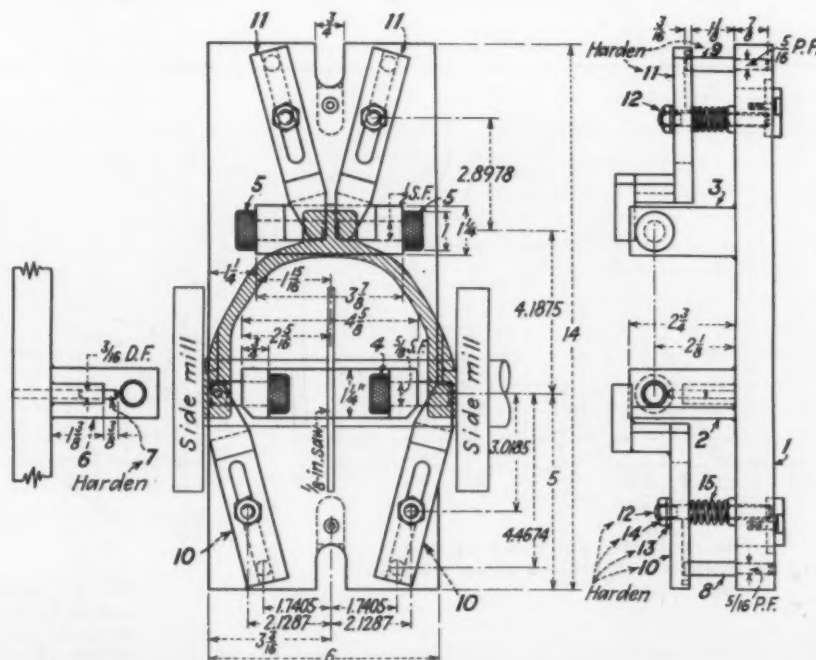


FIG. 3—Following drilling, the double casting is side milled and cut into two parts in this milling fixture. Details of its construction and use are included in this article.



# Quench Cracking Factors

**SUMMARY:** An investigation of the factors governing quench cracking in light and heavy-walled tubes is described. It was found that a definite correlation exists between quench cracking and such variables as carbon content, pouring temperature, ingot size and forging reduction, method of quenching, and finishing temperatures.

**P**RODUCTION data in the manufacture of light and heavy-walled tubes indicated a definite correlation between quench cracking and carbon content, insofar as the likelihood of cracking is concerned. It was also evident that other factors influencing quench cracking are the method of quenching, as well as the ingot size and forging reduction. Assembling and analyzing data in this manner permits separation of the numerous variables affecting quench cracking so that they may be submitted for further examination in the laboratory in the order of their importance.

Two basic electric heats were melted simul-

taneously, tapped into a single ladle, and three ingots cast to produce one gun tube per ingot. Following stripping, the ingots were placed in a soaking furnace and then forged into rough gun tube shape. These forgings were rough machined, heat treated, and then quenched in a vertical position with the muzzle end up.

Water under pressure was forced upward into the bore about 10 sec after the OD sprays were started. A sleeve was dropped over the muzzle end after a certain interval of time to prevent further cooling on the outside of the muzzle end. The bore quench was cut back or turned off after a specified length of time had elapsed. Analysis

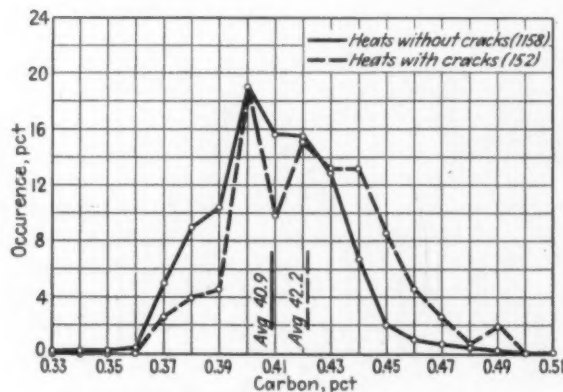


FIG. 1—Typical distribution of carbon content in heats with and without cracked tubes.

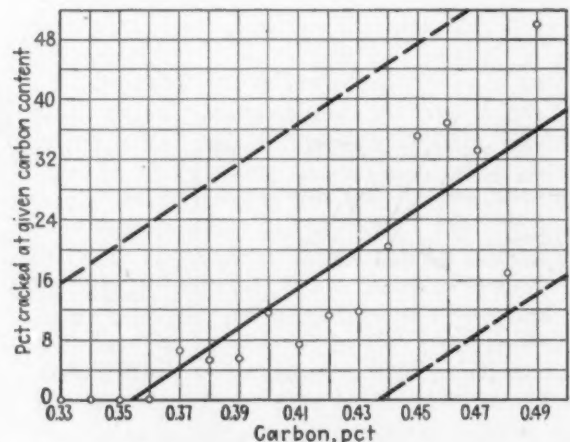


FIG. 2—Typical regression line for percent of heats with cracked tubes at a given carbon content. Correlation coefficient ( $R$ )—0.866.



By D. W. McDOWELL, Jr.

Asst. Prof. of Engineering,  
University of Buffalo,  
Buffalo, N. Y.

of the steel used was 0.35 to 0.50 pct C, 0.65 to 0.85 pct Mn, 1 pct average Cr, 0.35 pct average Mo, and 0.10 pct average V.

Losses resulting from quench cracking, low mechanical properties, and other causes, are listed in table I for the entire 8 in., 155 mm, and 4.5 in. tubes. It will be noted heat losses owing to quench cracking of 8 in. tubes totaled 15.10 pct as compared to 6.9 pct for 4.5 in. tubes and 3.59 pct for 155 mm tubes; however, losses owing to low mechanical properties run from 6.9 pct for 4.5 in. tubes to 5.21 for 155 mm and 0 pct for 8 in. tubes. The loss owing to quench cracking was exceeded only by the loss resulting from deficiency

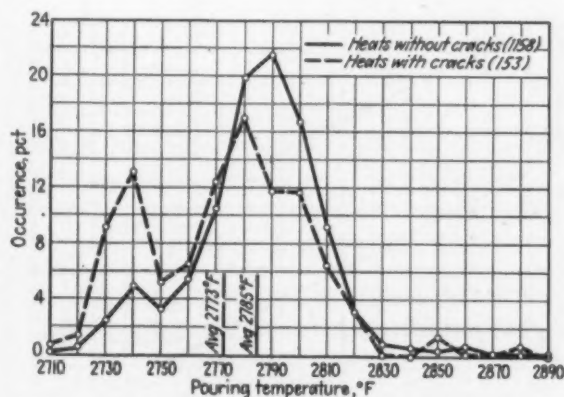


FIG. 3—Typical distribution of pouring temperature for heats with cracked tubes and heats without cracked tubes.

TABLE I

Summary of Losses in Typical 155 mm, 8 in., and 4.5 in. Tube Practice  
155 mm Tubes

No. of Forgings Made	No. Shipped	Quench Cracked	Low Tests	Scrap	Flakes	% Shipped
91	76	4	9	2	0	83.5
100	86	10	17	7	0	66
100	86	21	7	6	0	66
100	84	9	16	11	0	64
100	89	16	10	5	0	69
100	76	8	13	3	0	76
100	90	4	6	0	0	90
100	91	0	8	1	0	91
100	89	3	6	2	0	89
100	96	0	4	0	0	96
100	96	1	3	0	0	96
100	89	0	7	0	4	89
100	76	1	7	2	15	76
100	80	1	3	1	15	80
100	85	0	12	0	3	85
100	86	12	7	1	12	68
100	87	5	2	0	6	87
100	96	0	2	0	0	96
100	99	0	0	1	0	99
100	99	0	1	0	0	99
100	94	0	4	2	0	94
100	99	0	0	0	1	99
100	74	3	0	1	22	74
100	99	0	0	1	0	99
100	99	0	1	0	0	99
99	99	0	0	0	0	99
91	87	1	0	3	0	87
86	72	3	0	10	1	83.7
16	12	0	0	0	4	75
Total 2783	2395	101	145	59	83	.....
Percent.....	86.06	3.59	5.21	2.12	3.00	98.98

8 in. Tubes

No. of Forgings Made	No. Shipped	Quench Cracked	Low Tests	Scrap	Flakes	% Shipped
100	89	4	0	0	7	89
100	66	10	0	1	23	66
78	48	28	0	2	0	62.34
Total 278	203	42	0	3	30	.....
Percent.....	73.02	15.10	0	1	10.79	73.02

4.5 in. Tubes

No. of Forgings Made	No. Shipped	Quench Cracked	Low Tests	Scrap	Flakes	% Shipped
100	76	12	9	1	0	76
74	69	0	3	0	2	93.24
Total 174	147	12	12	1	2	.....
Percent.....	84.48	6.9	6.9	.57	1.15	.....

TABLE II

Percent of Heats With Cracked Tubes As a Function of Ingot Size and Forging Reduction

Tube Size	Heats Cracked	Heats not Cracked	Pct Cracked	Forging Reduction
57 mm	0	3	0	4.48
75 mm	0	6	0	5.09
105 mm	0	38	0	4.95
80 mm	0	1	0	5.44
105 mm	0	9	0	8.08
105 mm	0	1	0	10.32
155 mm	0	140	0	4.74
4.5 in.	7	44	13.72	5.53
105 mm	0	4	0	11.13
155 mm	1	38	2.70	5.50
105 mm	1	21	4.55	12.84
155 mm	68	675	9.14	5.90
105 mm	0	5	0	13.74
155 mm	37	1739	2.08	6.31
4.5 in.	4	122	3.18	7.36
8 in.	1	3	25	3.36
155 mm	13	63	17.11	6.74
155 mm	0	4	0	7.64
8 in.	43	228	15.87	4.06
155 mm	1	1	50	9.09
8 in.	4	0	100	4.83



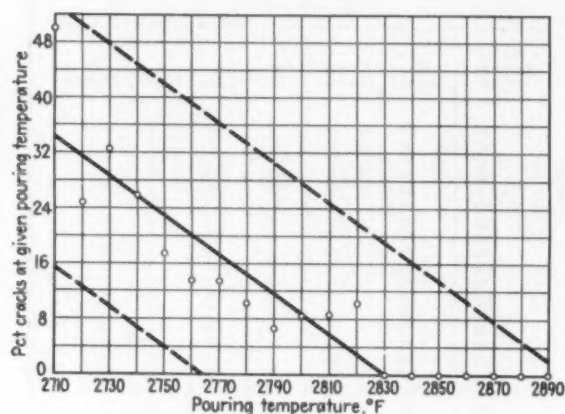


FIG. 4—Typical regression line for percent of heats with cracked tubes at a given pouring temperature. Correlation coefficient ( $R$ )—0.875.

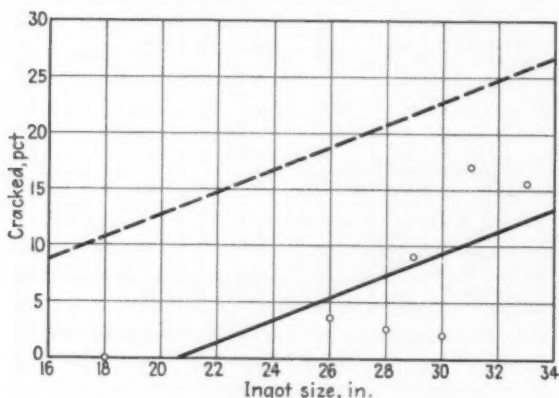


FIG. 5—Typical regression line for percent of heats with cracked tubes at a given ingot size. Correlation coefficient ( $R$ )—0.71.

in mechanical properties in the one case (155 mm).

In fig. 1, distribution curves for the carbon content of heats which had no cracked tubes and for heats which had one or more tubes cracked show the curve for cracked heats definitely displaced to higher carbon contents. Difference between the averages (40.9 and 42.2 pct C) is statistically significant, i.e., not due to chance alone.

This relationship can be presented by another method as shown in fig. 2, where the percent of total heats at a given carbon content which yielded cracked tubes is plotted as a function of the carbon content.

The correlation coefficient is  $r = 0.866$ , denoting a high degree of correlation between the likelihood of cracking a heat and the carbon content. It is interesting to note that no cracking is to be expected in heats of 0.35 pct C or less; therefore, these data indicate that the safe upper limit for carbon content in terms of cracking is 0.35 pct.

Figs. 1 and 2 did not take into account the severity of cracking per heat. The percent of cracked tubes in the heats was plotted as a function of the carbon content, and it was found that severity of cracking in a heat bears no relationship to carbon content. Thus, although the probability of cracking a heat increases with the carbon content, there is as great a chance of severely cracking a heat at low carbon content as there is a heat with higher carbon. Very little effect on quench cracking was noted for the total manganese-chromium-molybdenum content in the heat.

A rather good negative correlation was found between the heat pouring temperatures and the tendency toward quench cracking. The distribution curves in fig. 3 for heats with and without cracked tubes indicate less cracking with higher pouring temperatures. The average pouring temperatures for the two populations differ significantly. The regression line in fig. 4 shows a high degree of correlation ( $r = -0.875$ ). There are two few data beyond 2850°F to determine if cracking would increase beyond this pouring temperature.

Table II summarizes the effect of ingot size and

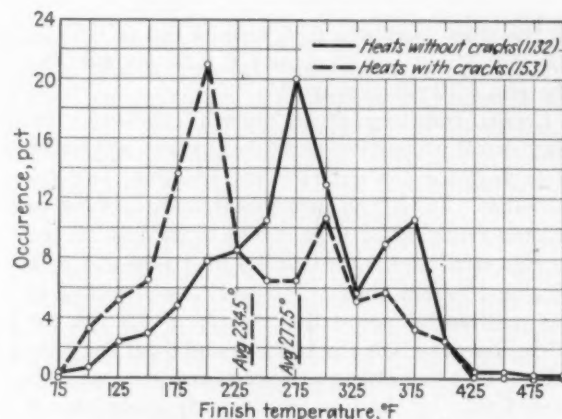


FIG. 6—Typical distribution of finish temperature for heats with cracked tubes and heats without cracked tubes.

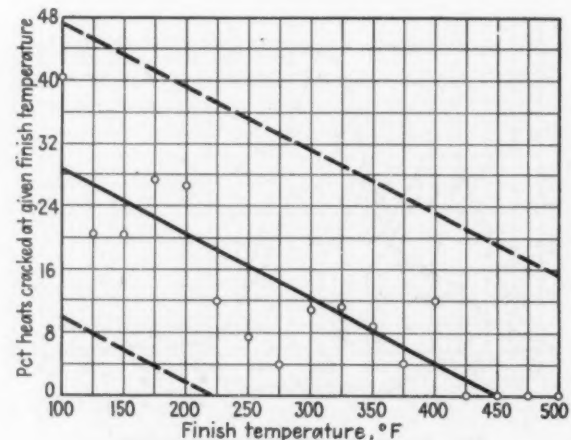


FIG. 7—Typical regression line for percent of heats with cracked tubes at a given finish temperature. Correlation coefficient ( $R$ )—0.864.

TABLE III

Effect of Forging Reduction on Frequency of Occurrence of Quench Cracking

Forging Reduction	Pct Heats Cracked
4-4.5.....	15.67 (271 heats)
4.5-5.....	0.0 (178 heats)
5-5.5.....	2.70 (37 heats)
5.5-6.....	9.44 (794 heats)
6-6.5.....	2.06 (1776 heats)
6.5-7.....	17.10 (76 heats)
7-7.5.....	3.17 (126 heats)

TABLE IV

Effect of Forging Reduction on Frequency of Occurrence of Quench Cracking

Forging Reduction	Pct Heats Cracked
4-5.....	9.58 (449 heats)
5-6.....	9.15 (831 heats)
6-7.....	2.70 (1852 heats)
7-8.....	3.17 (126 heats)

TABLE V

Effect of Austenitizing Temperature on Quench Cracking

Austenitizing Temperature	No. Heats not Cracked	No. Heats Cracked	Pct Cracked
1600 °F	841	129	13.2 (entire prac.)
1565 °F	29	7	19.4
1600 °F	181	30	14.2 (same time period as 1565 °F heats)

TABLE VI

Effect of Type of Quench on Frequency of Occurrence of Quench Cracking

Type of Quench*	Type Quench Study			Pct Heats Cracked
	No. Heats not Cracked	No. Heats Cracked	Total No. Heats	
A	7	1	8	12.50
B	1	1	2	50.00
D	59	25	84	29.76
D <sub>1</sub>	29	9	38	23.68
E	1	2	3	66.66
F	377	32	409	7.82
G	2	0	2	0.00
J	22	2	24	8.33
K	3	0	3	0.00
L	480	36	516	6.98
N	135	40	195	20.51
Total	1136	149	1284	.....

\* Legend for Type of Quench

A—Water 10 min on OD 3 min cut back in bore

B—Water 7 min on OD 3 min sleeve drop on ME

D—Water 7-8 min on OD 3-4 min cut back in bore 3-4 min sleeve drop on ME

D<sub>1</sub>—Water 7-8 min on OD 5-8 min cut back in bore 4-5 min sleeve drop on ME

E—Water 9 min on OD 4 min cut back in bore

F—No water n bore Water 14-16 min on OD

G—Water 3-5 min on OD 1-2 min cut back in bore

J—Water 8-9 min on OD No water in bore 4 min sleeve drop on ME

K—Water 4-6 min on OD Water 1-2 min in bore 1-2 min sleeve drop on ME

L—Water 10-11 min on OD Water 1-3 min in bore 1-2 min cut back in bore 2-4 min sleeve drop on ME

N—Water 10-11 min on OD Water 6-8 min in bore 4-7 min sleeve drop on ME

forging reduction on the frequency of quench cracking. Considering ingot size alone, an erratic trend is noted in fig. 5 for increasing cracking with increasing ingot size. The correlation coefficient is 0.71 with a standard deviation of 0.20, which denotes a low order of precision in the determination of the correlation coefficient.

Considering the effect of forging reduction alone on the frequency of occurrence of quench cracking, erratic behavior is observed. When steps of reduction of 4:1, 4.5:1, 5:1, etc., are considered this erratic behavior can be shown as in table III. When forging reduction is considered in steps of one, a trend is indicated as shown in table IV.

Thus, it may be tentatively concluded, in the absence of relating data, that increasing the degree of reduction by forging seems to reduce the frequency of occurrence of quench cracking.

In heats with over 0.40 pct C, the austenitizing temperature in some cases was reduced from 1600° to 1565°F as a step to minimize the occurrence of quench cracking. The percent of cracked heats in all heats in the practice with 0.40 pct or more carbon austenitized at 1600°F and at 1565°F were tabulated, with the results shown in table V.

Considering the entire practice, no advantage was obtained by dropping the austenitizing temperature, in terms of quench cracking. Selecting the heats with 0.40 pct or more carbon which were austenitized at 1600°F in the same period of the practice in which heats were austenitized at 1565°F, it is noted that again no advantage is evident in the case of these more comparable samples. It can be concluded that the available data show no decrease in frequency of quench cracking due to a change from 1600° to 1565°F in the austenitizing temperature.

The effect of type of quench and the frequency of occurrence of quench cracking was studied by determining the percent of cracked heats for each given quenching practice. The results are tabulated in table VI. The highest losses came in practice D, while practice N seemed to give less cracking.

The distribution curves for finishing temperatures at the muzzle ends of the tubes for heats with and without cracked tubes are presented in fig. 6. The heats with no cracked tubes are significantly displaced to higher finishing temperatures, demonstrating that the frequency of cracking increases with decreasing finishing temperatures. Fig. 7 shows the regression line for percent of cracked heats against finish temperature.

A high degree of negative correlation ( $r = -0.864$ ) exists, which predicts decreasing likelihood of cracking with increasing finishing temperatures. The effect of increasing the finishing temperature in the quench on the transverse mechanical properties has not been studied.



# HOW MASTER LOCK COMPANY cut metal cleaner consumption $33\frac{1}{3}\%$ ...with **PENNSALT CLEANERS**

The Master Lock Company, big name in the padlock industry, was looking for a metal cleaner that could do a universal cleaning job prior to plating. This cleaner had to remove oils from steel and brass parts in washers, in barrel cleaning, in soak cleaning, and electro tank cleaning equipment. Typical parts are shown above.

The Pennsalt field technician recommended a streamlined cleaning procedure built around one of Pennsalt's fused alkaline cleaners.

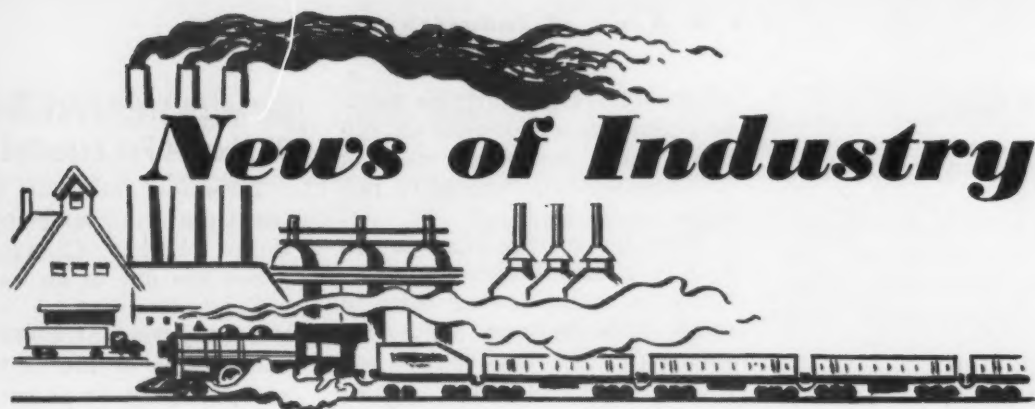
Then things really came clean. Cleaning material consumption was cut  $\frac{1}{3}$ ! In comparison to the previous

cleaner, Pennsalt gave better results for less money.

That's the kind of service manufacturers are getting from Pennsalt. And the kind of economical result:—production costs cut! Check your Pennsalt representative, he can give you the full story on the Pennsalt Metal Preparation Service. Or write: Special Chemicals Division, Pennsylvania Salt Manufacturing Company, Philadelphia 7, Pa.

**PENN SALT**  
metal cleaning compounds





### Rail vs Truck

A comparison of rail versus truck freight rates on iron and steel shipments, in cents per 100 lb, from Pittsburgh to:

	Rail	Truck	
		Existing	Proposed
Detroit	51	40	46
Chicago	63	48	55
Buffalo	44	31 to 35	40
Cleveland	34	26	31
Columbus	40	30	36
Toledo	44	35	40

### Chevrolet Adds Two Warehouses

Detroit—To keep pace with its expanded production distribution facilities, Chevrolet is adding new warehouses at Detroit and Milwaukee comprising nearly 200,000 sq ft for the storage and distribution of automotive parts.

The Detroit warehouse will be located on Decatur near Tireman, to serve 2455 Chevrolet, Pontiac and Oldsmobile dealers in this area.

The Milwaukee warehouse, to be located on N. Port Washington Road near Capitol Drive, will have 57,600 sq ft.

### Packard Hits All-Time Peak

Detroit—Car shipments by Packard Motor Car Co. during 1949 hit an all-time peak of 102,411 cars, surpassing the 1937 record of 98,686 units, according to Hugh J. Ferry, president of the company.

## Truck Freight Rates to Advance 15 pct

Revisions due by Mar. 1 . . . Rising costs blamed . . . New schedules, still about 10 pct under rail rates, will boost trend to backyard buying.—By JOHN B. DELANEY.

Pittsburgh — Steel consumers who specify shipment by truck are going to find their freight rates increased an average of 15 pct—as much as 25 pct or more in some instances—sometime between now and March 1.

Iron and steel truckers will file new tariffs with the Interstate Commerce Commission on or before Feb. 1. They will become effective 30 days later, unless there are protests, which could delay the effective date by as much as eight months. There is not likely to be any.

Rising costs are to blame. The truckers say they are being squeezed by increased labor, equipment and insurance costs plus the fact that a voluntary agreement to limit payloads has resulted in a big dent in net revenues. (THE IRON AGE, Sept. 8, '49, p. 101.)

#### More Backyard Buying

Since the customer absorbs freight costs under f.o.b. mill pricing, the increases are likely to make it more imperative for consumers to buy from nearby mills, thus further restricting the market area served by a given producer. This will show up when the present heavy demand for

steel products eases.

It might even tend to slow the trend toward shipment by truck as opposed to rail, although truck rates will still be at least 10 pct below existing rail charges. The existing spread between truck and rail rates is anywhere from 25 to 35 pct in favor of trucks.

#### Suppliers Are Concerned

Shipment of iron and steel products by truck have increased greatly in the last several years—so much so that some steel producers and other shippers are becoming seriously concerned over the plight that the railroads now find themselves in. One large steel producer reported that shipments by truck increased 12.5 pct in 1948 and 13.5 pct in 1949—a total of 26 pct in two years. A trucker's estimate was slightly higher.

While not condoning the "head-

Turn to Page 70

### Will Study Apprentice Training

Washington—A group of Greek Government officials, labor representatives, and workers from machine shops and other industrial fields will arrive this month for a 6-week study of American methods of apprentice training.

## Truck Freight Rates

*Continued from Page 69*

in-the-sand" attitude by railroads in failing to recognize soon enough the competitive threat of highway transportation, some shippers feel that a sound rail transportation system is so essential to the national welfare that something must be done to improve their competitive position. They are cooperating with the railroads in the hope of solving some of these problems.

The trucking companies give these reasons to justify their need for additional revenue:

(1) Voluntary limitation of payloads on trucks hauling from steel mills, as of last Nov. 1. It used to be that a trucker could pull into a mill and order so much steel loaded onto his truck. The result was that many trucks were overloaded. But not any more. Under the voluntary arrangement between trucker and shipper, loads are limited to the maximum capacity of the trucks. As a result, the trucker now uses two to three trucks to haul a load formerly carried by one. The average reduction in gross weight hauled per truck is 25 pct. The agreement is being strictly observed by just about all shippers and truckers. Another requirement, effective Jan. 1, is that trucks be equipped with bulkheads or other devices to secure loads. Further restrictions may follow the carrier-ICC meeting in Toledo Jan. 11.

(2) Increases in equipment, materials and labor costs. Tire prices are up 7 pct and may go up another 5 pct. Gasoline prices are up. Labor rates were increased 15 cents an hour last January, and pension and welfare benefits equivalent to 10 cents an hour were agreed upon last Nov. 15.

(3) Higher insurance costs. Rates have gone up at least 30 pct in the last 18 months.

The new truck tariffs will in most cases equal the rail rates in existence before the rails were granted the increase that became

effective last Sept. 1. A few might be a penny or so below the old rail rates, and a few others may not be increased for competitive reasons.

While the average increase will be 15 pct, some "depressed" rates—that is, rates knocked down in tariff wars between truckers—will go up as much as 26 pct. Pittsburgh-to-Buffalo rates are an example. They ranged from 31 cents to 35 cents per 100 lbs. The new rate will be 40 cents.

Intrastate truck rates on iron and steel products in Ohio will go up 20 pct Jan. 14.

*Resume Your Reading on Page 70*

## Buys Forging Department

**Cleveland**—Commercial Forgings Co. has purchased the forge department of Johnston & Jennings Co., Cleveland.

The purchase includes a large stock of carbon and alloy steel forging billets; special tools for making arbors, spindles and other parts, and hollow boring machines for deep drilling and boring holes up to 20 in. in diameter and 20 ft in length.

Jerry Zeman, formerly sales manager of the forge department at Johnston & Jennings, has joined the Commercial Forgings sales department.



"Wow! Lookit the one for August."

## Canadian Steel Price Boost Of About 4 Pct Expected Soon

**Toronto**—Following close on the heels of higher prices in the United States, Canadian steel prices are due to go up about 4 pct early this year.

It is reported increases will only affect three or four items (bars and plates are two) and the net result will be to add about \$13 million to the annual bill of around \$300 million for Canadian-made steel.

However, U. S. increases and devaluation promise to bring the total cost increase of all steel used to \$27 million. Since Canada buys about one third of her steel requirements in the U. S. (around one million tons a year), the U. S. price raise is expected to tack on \$3 or \$4 million. Devaluation will probably add another \$10 million.

### Higher Costs Blamed

Reasons being given for the increase: The last boost came in October, 1948. Since then wages have been increased 10¢ an hr; freight rates have gone up sharply; raw material costs are higher.

There has been some speculation that the increase would be postponed until after the industry sees how it makes out in pending negotiations on 1950 wage contracts. However, one company official said the industry doesn't feel it can absorb increases any longer.

Incidentally, the coming increase will be the first put through by the industry on its own. Remaining price controls on steel were lifted only Dec. 1, when the federal government finally stepped out of the pricing picture. Last to be cleared were the heavy tonnage items; ingots, slabs, billets, blooms, bars, sheets, plates and wire rods.

## Building New Quarters

**Buffalo**—Beals, McCarthy & Rogers, Inc., Buffalo, dealers in iron and steel warehouse products, will build a \$750,000 office and warehouse building at South Park Ave. and Katherine St.



## Coal Operators Fight for Their Industry

**Diplomacy is discarded in all-out struggle with John L. Lewis for control of the coal industry . . . Operators know they must not capitulate again**

**Pittsburgh**—The way the soft coal operators are going after John L. Lewis in their running battle with him for control of the industry is so out of character that even the United Mine Workers chieftain's famous bushy eyebrows must be raised.

The show is not going according to script—for the moment, at least. Usual procedure was for Mr. Lewis to pick up the ball and

*For news on captive mine strike see p. 79—Ed.*

then put on a one-man performance until the grand finale—the signing of a contract on the union's terms. The operators customarily were part of the hazy background, with only an occasional bit part in the spotlight.

Since John L. Lewis is not a personality who can be sold short, the battle may yet wind up in his favor.

But meanwhile the operators are acting like someone with a Cause. In the last several weeks they have been quite vocal, even colorfully so, while Mr. Lewis fiddles around with a handful of small producers—"gopher hole" producers, the operators call them—who he says have agreed to his latest contract demands.

### "Man of the Year"

Principal reason for this aggressive attitude, according to an operator spokesman, is the conviction that if the UMW leader gets what he wants this time, the industry is a gone goose. They point to the inroads made by other fuels on coal due to the rising price of coal and the uncertainty of supply because of numerous strikes. Even the railroads, who depend on coal for a good chunk of their freight revenue, are turning more and more to diesel-electric locomotives.

The joke going the rounds that

the oil and gas industries plan to honor Mr. Lewis as their 1949 "Man of the Year" is a grim one to the operators.

Lewis' control of the industry was never more evident than last year. The first strike came in March—a two-week "Memorial" period. In May, Lewis called for another walkout—"stabilizing inaction." The three-day week was begun July 6 and continued to Sept. 19 when near-collapse of the UMW Welfare Fund prompted a full-scale shutdown in protest. Full production was resumed Nov. 9, but the miners were back on a three-day week at the beginning of December.

### The Battle Unfolded

Evidently feeling that diplomacy will get them nowhere with the mine union leader, the operators:

(1) Announced they are united in opposition to further contract



"I'm getting pretty tired of all these personal calls around here."

concessions and will agree only to renewal of the 1948 contract with the proviso that the "willing and able" clause which permits strikes for just about any reason be eliminated: (Lewis wants a wage increase of 95 cents a day, an increase of 15 cents per ton—to 35 cents—in the welfare fund royalty payments by operators, and approval of a Lewis-designated new board of trustees for the fund.)

(2) Filed charges of unfair labor practices against the UMW before the National Labor Rela-

*Turn to Page 72*

## Scrap Convention This Month

**Washington**—The opening business session of the annual convention of the Institute of Scrap Iron & Steel Inc., to be held here Jan. 22-24, will be built upon the theme, "A Blueprint for the Scrap Industry for 1950: Improved Consumer, Public, and Industrial Relations."

At this session all speakers will be from outside the scrap industry. They will include Leon Keyserling, acting chairman of the President's Council of Economic Advisers; Henry Roemer, Jr., executive vice-president, Sharon Steel Corp.; Henry P. Fowler, manager of the trade association department of the Chamber of Commerce of the United States; and Merlyn S. Pitzele, labor editor of *Business Week*.

## Buys Ohio Plastics Plant

**Cleveland**—U. S. Rubber Co. has purchased Glenn L. Martin Co.'s chemical division including the plastics plant at Painesville, Ohio, in a sale reported to involve between \$6 million and \$7 million.

In addition to the model post-war plant at Painesville, U. S. Rubber Co. gets laboratory equipment in Baltimore, Md., where Glenn Martin has its headquarters, and patents and the trade name "Marvinol." Built two years ago, the Painesville plant consists of nine buildings and is the third largest "vinyl" plastics plant in the country.



## INDUSTRIAL SHORTS

**MOTORAMA**—The new mid-century look in General Motors automobiles will be displayed in New York at the Waldorf-Astoria Hotel from Jan. 19 to 27 in GENERAL MOTORS CORP.'s transportation show.

**OPENS RESEARCH PLANT**—The U. S. Air Force has announced the opening of the USAF Manufacturing Methods Pilot Plant in Adrian, Mich. GERITY-MICHIGAN MFG. CO. has been awarded a contract to operate and maintain the plant to be used for experimentation and development of new forging techniques and procedures.

**ADDS NEW LINE**—The Solar-Sturges Mfg. Co., Melrose Park, Ill., manufacturer of dairy cans, has been acquired by the PRESSED STEEL CAR CO., New York, for approximately \$1 million. Solar-Sturges will continue its can making operations with its present personnel as a division of Pressed Steel.

**NEW TOOL STEEL**—Development of a new tool steel, now being marketed, specifically designed for hot work has been announced by ALLEGHENY LUDLUM STEEL CORP., Pittsburgh. The new alloy, B-47 Hot Work Steel, is a combination of chromium, tungsten, cobalt, vanadium and iron.

**CLEVELAND BRANCH**—A Cleveland office at 609 Union Commerce Bldg. has been opened by the TODD STEEL CORP., Detroit. Clayton Grandy, formerly president-executive secretary of the Steel Products Warehouse Assn., will manage the new branch.

**CHANGE OF ADDRESS**—The Philadelphia district office of the BALDWIN LOCOMOTIVE WORKS has been moved from Broad St. Station Bldg. in Philadelphia to the main office building at Eddystone, Pa.

**EXPANDING**—The purchase of controlling interest in Reed Metal Crafts, Inc., Chicago, has been announced by PRECISION CASTINGS CO., INC., Syracuse, N. Y. Precision Castings will add more equipment to the Chicago plant to include plating, painting and machining.

**OPENS IN CANADA**—Nelson Stud Welding Div. of Morton Gregory Corp. has announced the formation of NELSON STUD WELDING CO. OF CANADA, LTD., at Toronto and its recently appointed Canadian distributor, Rudel Machinery Co., Ltd., of Montreal, Windsor and Vancouver.

**MORE HEATERS**—The F. L. Jacobs Co. plant at Indianapolis has been purchased by AFFILIATED GAS EQUIPMENT INC. under certain conditions. The plant will be used largely by Bryant Heater Div. for the manufacture of water heaters and other Bryant products.

**DRAVO REP**—Dravo Corp., Pittsburgh, has appointed GEORGE B. LIMBERT & CO., INC., CHICAGO, a representative in the sale and installation of fabricated piping for industrial plants, oil fields, central utility stations, water works, gas transmission systems and other services.

**FURNISHING HANGERS**—An Army contract has been awarded to ALLIED STRUCTURAL STEEL CO., Chicago, to furnish 16 portable steel hangers at a total price of \$927,950. A contract awarded the Brainerd Steel Co., Warren, Ohio, calls for 750 tons of steel strapping at a cost of \$194,194.30.

**WEST COAST AGENT**—The Parker Appliance Co., Cleveland, has appointed BEARING SPECIALTY CO., Oakland, Calif., as a distributor for O-rings. They will also offer application engineering service for O-ring use in sealing hydraulic and other fluid-handling systems.

## Coal Operators Fight

*Continued from Page 71*

tions Board in the hope of ending the three-day week and resuming full production through an injunction: (Charges were filed by the Southern Coal Producers' Assn. and eight groups of northern and midwestern producers claiming to represent about 111 million tons annual production.) U. S. Steel Corp.'s H. C. Frick Coke Co. and other "captive" producers also joined in the complaints.

(3) Hammered insistently on the theme that coal stockpiles are now dangerously low and warned that the first real cold spell will bring hardship. While President Truman has thus far refused to recognize that an emergency exists, the Interstate Commerce Commission did so by ordering a cutback in coal-hauled passenger trains. The railroads promptly obeyed.

(4) Blamed Mr. Lewis for the decision to shut down Jan. 6 the large gasification pilot plant at Library, Pa., which was operated for more than a year by Pittsburgh Consolidation Coal Co. and Standard Oil Development Co. George H. Love, Consolidation president, said conditions in the industry are so bad economically that he sees no good reason to continue the work, at least while labor relations are uncertain. Laboratory and exploratory research at Library will continue.

### Says Industry Is United

Mr. Love has been most outspoken against Mr. Lewis. As chief spokesman for the operators, he has accused the UMW leader of trying to impose a "blank check" contract; of "vicious" tactics against the industry and its employes, and of seeking to install "two stooges of his own selection" to oversee the welfare fund.

"The entire industry," says Mr. Love, "is united in its stand that there must be no interference or restriction in the use of productive facilities."

*Resume Your Reading on Page 71*

## British Bid for Canadian Steel Markets

**Orders already reported up 300 pct . . . More new orders are expected . . . British bid is aimed at market now held by U. S. . . . Canadian government approves.**

**Toronto**—United Kingdom steel producers claim they are making substantial inroads into the Canadian market at the expense of the United States mills.

Paul R. Wendt, head of an agency recently set up in Toronto to represent three of the larger U. K. mills, says bookings are already running 300 pct higher.

The 1950 target is 200,000 tons against a postwar average of 70,000 tons. Belgian and Luxembourg producers are also going hard after Canadian business.

All make it clear, however, that their goal is the market now served mainly by the U. S. for special steels of a type or kind not available in Canada. They insist they will not "encroach" on fields served by Canadian mills.

### Drive Is Getting Results

If the British make it, it will be at the expense of U. S. mills. No one is making any secret of this fact. U. S. exports to Canada are running around one million tons a year. Canada produces about three million tons.

The chief selling point is the saving in scarce U. S. dollars. In this, they have the utmost cooperation from the Federal Government whose job it is to try and balance U. S.-Canadian trade. Steel is the biggest drain on Canadian dollar reserves.

### Other Orders Expected

The current British drive has already resulted in several healthy bookings. One of the biggest was an order for 16,000 tons of rails for extension of British Columbia's Pacific Great Eastern Railway. Other orders are in the wind for this project.

While orders for a wide range of British steels have been se-

cured, the principal products concerned are plates, bars and tubes.

Steelworks on the North-East Coast and in Sheffield, Northants, South Wales and Scotland will be supplying the bulk of these orders.

One of the most important projects for which material is required is the development of the oil fields in Alberta.

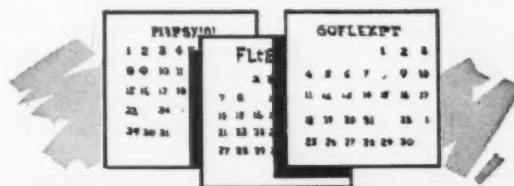
### Deliveries Are Improving

Also cooking is a deal for special steel used in agricultural implements which now has to be imported from the U. S. because it isn't made here. One firm alone buys \$1 million worth a year in the U. S. If U. K. samples now being tested stand up, half this

business has been promised a British firm.

Devaluation and U. S. price increases have given the drive new impetus. The British claim to have been competitive on many items before, now they're even better off pricewise. On Canada's west coast Belgian steel is said to already be below Canadian prices which are generally lower than U. S. On the East coast, they're on a par. If a Canadian price increase comes, these countries will be in an even more favorable position.

What's more, the old U. K. bugbear of delivery is being cleared up. Firms represented by the Toronto agency are promising 6 to 8-week delivery. Just recently, the tardiness of one U. K. firm cost it a \$75,000 government order. A sharply-worded cable from its Canadian representative brought a promise that it wouldn't happen again. Now an even bigger government order is looming.



## Dates to Remember

- Jan. 14 American Electroplaters Society, annual meeting, Chicago.
- Jan. 15-19 Associated Equipment Distributors, annual meeting, Chicago.
- Jan. 16-18 Truck-Trailer Manufacturers Assn., annual convention, Edgewater Park, Miss.
- Jan. 16-19 Plant Maintenance Show, Cleveland.
- Jan. 18-20 American Management Assn., general management conference, San Francisco.
- Jan. 20 Malleable Founders' Society, semiannual meeting, Cleveland.
- Jan. 22-24 Institute of Scrap Iron & Steel, Inc., annual convention, Washington.
- Jan. 23-24 Industrial Furnace Manufacturers Assn., mid-winter meeting, Dearborn.
- Jan. 23-27 American Society of Heating & Ventilating Engineers, annual meeting, Dallas.
- Feb. 12-16 American Institute of Mining & Metallurgical Engineers, annual meeting, New York.
- Mar. 21-22 Steel Founders' Society of America, annual meeting, Chicago.
- Apr. 3-4 Assn. of Iron & Steel Engineers, spring conference, Birmingham.
- Apr. 4-8 Chicago Technical Societies Council, national production exposition, Chicago.
- Apr. 5-7 American Institute of Electrical Engineers, conference on electric welding, Detroit.
- Apr. 5-7 Midwest Power Conference, Chicago.
- Apr. 10-14 American Society of Tool Engineers, industrial cost-cutting exposition, Philadelphia.
- Apr. 25-26 Metal Powder Assn., annual metal powder show, Detroit.



## E. T. Weir Writes to Defend Freight Absorption by Industry

Tom C. Campbell  
Editor, THE IRON AGE

Dear Tom:

Newspaper reports based on your signed article in the annual review issue include the following statement:

"Industry is starting to realize that it does not make much difference what the Federal Trade Commission or Congress does about f.o.b. mill prices."

We take serious exception to this statement which is completely at variance with what we know about the attitude of the steel industry and other industries. What the government does about pricing methods—particularly freight absorption—is of vital importance. It will affect the very foundation on which all American industry and commerce has grown and developed.

Your statement that the trend will be for more markets to be served by nearby steel plants and that "cross hauling and freight absorption will be pretty much out of the question" is, in my opinion, a misinterpretation of the basic situation.

Steel companies have always tried to sell as much product as possible in nearby markets because this minimizes the cost of freight absorption. But the areas that are naturally best suited for steel production have never consumed sufficient steel to absorb more than a fraction of the output of mills located in those areas. Through economic necessity, steel companies have had to sell their products in all markets and have had to absorb freight to do it. This circumstance caused the steel industry and many others to develop as national industries to the country's great benefit.

Nothing in the present situation and nothing we can see in the future alters this basic economic factor of steel production and distribution. It will be a continuing necessity for steel companies to reach far afield for tonnage, and this necessity will be more compelling than ever because of the tremendous increase in steel capacity. For this reason, it is vital to the very life blood of steel and other industries that the legal right to absorb freight be clearly established.

I regret very much that IRON AGE has minimized the importance of the f.o.b. mill price question because your publication is generally accepted as speaking with authority on steel industry matters and in this case, it has not done so.

Cordially,

Ernest T. Weir  
Chairman, National Steel Corp.

## Mica Is Made Synthetically

Washington — Successful synthesis of mica by scientists of the Bureau of Standards was announced today (Jan. 12) by Commerce Secretary Sawyer. The synthetic mica has essentially the same properties as natural mica but is superior to the natural substance in its ability to withstand high temperatures. With the United States only producing a fraction of its requirements for mica, the discovery was hailed by

Mr. Sawyer as of "immense importance."

The synthetic mica has four ingredients. Three of these are common materials sometimes used in making glass—quartz, magnesite, and bauxite. The fourth—a fluorosilicate compound—is added because it acts as a crystallizing agent.

The four powdered ingredients are placed in a platinum-lined crucible and melted in an electric furnace at a temperature of nearly 2500° F.

## Barium Steel Corp. Buys Chester (Pa.) Blast Furnace

Philadelphia—The old Chester, Pa., blast furnace which was operated briefly by a subsidiary of Standard Oil Co. (Indiana) and Brown Engineering Co., Houston, Tex., has been bought by Barium Steel Corp. (THE IRON AGE, Dec. 29, 1949, p. 11).

Barium Steel Corp., which operates Central Iron & Steel Co., Harrisburg, Pa., and Phoenix Iron & Steel Co., Phoenixville, Pa., has no immediate plans for operation of the furnace. This furnace was put into shape as a merchant pig iron furnace after the end of the war at a cost of more than \$3.5 million, including a complete carbon block lining, new blowers, an ore screening and crushing plant and a 1 ft 3 in. enlargement of the hearth diameter.

Its production is rated at more than 400 tons of iron a day using byproduct coke. The furnace had previously been equipped as a ferromanganese producer during the war by the government at a cost of more than \$1 million.

According to information in the trade the price of the furnace to Barium was in the neighborhood of \$500,000. The purchase involved a substantial down payment, the balance payable in 120 days.

## Senate Hearings on Steel Prices Are Set for Jan. 24

Washington — Senate hearings on recent steel price rises will extend over a 4-day period beginning Jan. 24, Senator O'Mahoney, D., Wyo., announced this week.

"We've received a number of protests over the price increases," Mr. O'Mahoney said. "We simply want to bring out the facts in these hearings."

Among the witnesses scheduled to appear before Mr. O'Mahoney's Senate-House economic committee are Benjamin F. Fairless, U. S. Steel Corp.; Hiland Batcheller, Allegheny-Ludlum Steel Corp.; A. B. Homer, Bethlehem Steel Corp.;



Ernest Weir, National Steel Corp.; A. W. Phelps, Oliver Corp.; Philip Murray, CIO; Jess Larson, General Services Administrator; and David Cole, member of the former fact-finding board on steel pensions.

Representatives of the Federal Reserve Bank of Boston are expected to present their views on the feasibility of constructing an integrated steel mill in New England.

Representative Celler, D., N. Y., also is planning a series of public hearings on price rises to be held in February. Dates will be set soon, Mr. Celler said this week.

### Iron Age Reports Staff Changes

New York—D. I. Brown has been appointed metallurgical editor of THE IRON AGE, effective immediately. He replaces Earnest Kopecki, who resigned to accept a



D. I. Brown



G. F. Elwers

position with Pennsylvania Salt Mfg. Co. Mr. Brown has been Chicago regional editor since 1946.

He began his business career in 1934 with Youngstown Sheet & Tube Co. In 1938 he joined the metallurgical observation corps of Carnegie-Illinois Steel Corp. He remained with Carnegie-Illinois until he joined THE IRON AGE staff in 1946.

George F. Elwers has been appointed Chicago regional editor of THE IRON AGE. He replaces D. I. Brown, who comes to New York as metallurgical editor.

He is a graduate of Marquette University. Prior to joining THE IRON AGE staff he was employed in the industrial press section of Allis-Chalmers Mfg. Co., Milwaukee.

## Stainless Steel Sales Prospects Look Good

**Curtain wall for building, television market and growth of stainless steel mine conveyer belts lead industry men to hope for wider markets in 1950—By BILL LLOYD**

Cleveland—In a world of television sets, conveyer belts and curtain walls, the shape of things to come for stainless steel, dark horse of the 1950 steel market, never looked better than it did this week.

First quarter demand for certain stainless products, particularly strip, is almost greater than present capacity can serve and new markets are opening up at a rate that has some of the rabid stainless supporters dreaming of an eventual doubling of present capacity.

What has happened to the stainless market is this—bulk of the big consumers like the automobile industry, refrigerator manufacturers, trailer makers, etc., came back to life after the steel strike, following a pre-strike interim period during which all but the automobile industry were relatively inactive.

### New Customers Plus Old

With the resurgence of regular consumers, new applications and new consumers came into the market, some in a big way. Brightest of the newcomers is the television industry which is expected to use 1500 to 2000 tons this year. With television still in relative infancy, ultimate size of this market is anybody's guess.

Potentially brightest of the immediate new markets for stainless, according to some of the steel industry's experts, is conveyer belts for coal mines, a market that now looks like 2500 tons a year.

### New Grades Developed

A third new market and a very important one is the architectural field, mainly the curtain wall (a wall section that supports no weight other than its own).

Other applications for stainless that look good are milk cans, fire extinguishers, elevator cabs, downspouts and gutters, nails and many others.

Related developments that augur well for stainless' future include a new grade recently developed for the pharmaceutical field, and another, with high resistance to sulphuric acid, for use in the chemical, textile and sulphite paper industries.

The atomic energy program, including the manufacture of isotopes, will require a lot of stainless for accessory equipment.

Demand for stainless wire has been increasing since the reconversion period, but it is still short of the wartime demand when need for welding rods for armor plate sent it booming. Present wire capacity is more than adequate to demand. In the stainless wire field, there is, apparently, no market that is likely to develop in the immediate future that will involve as much tonnage, for example, as the conveyer belts. But tonnage potentials of some of the present products are very big. Stainless nails, for example, are now in about the same position that copper plumbing occupied several years ago. Late last fall monthly production of stainless nails was about 4000 kegs. As rust streaks on the side of their houses gets

Turn to Page 76

### Chicago Buyers Plan Show

Chicago—The 16th Annual Products Show sponsored by the Purchasing Agents Assn. of Chicago will be held Feb. 14 through Feb. 16 at the Hotel Sherman here. The latest lines of leading manufacturers and industrial distributors will be displayed by more than 100 representative firms. Robert L. Krueger, chairman of the 1950 show and assistant purchasing agent of Goodman Mfg. Co., estimates that more than 15,000 persons will attend the 3-day meeting.

Viewing the News from

The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

**"Prognosis"**

WE poke fun at our contemporaries and view their Delphic excursions at this season with gentle skepticism. The plain truth is that none of us is immune. To look ahead is neither a vain hobby nor a black art. The constant effort to see tomorrow's stage is human. It is intelligent. It is necessary.

The light contempt which we occasionally direct at forecasts is usually invited by the pontification of the prophet and not by the proper purpose which anticipation of the future serves. The act of penetrating tomorrow's mysteries is not a science. The task must be approached with humility. The crystal ball is an imperfect optical instrument. Yet this is the season for "propheteering." Commitments must be made for the new year, risks assumed.

Business volume at the year-end is approximately 75 pct above the 1935-39 base. The year just passed has been good. It finished with a magnificent flourish that showed physical volume of retail trade as high as the previous year-end. The auto industry turned in a new high performance with approximately 6.2 million vehicles. The building industry surprised its friends and confounded the pessimists. The stock market ended at the best levels since the spring of 1946.

This picture is not likely to change overnight. An economy like the American moves with an enormous inertia. The year-end momentum will certainly carry along for at least 2 or 3 months—possibly longer. This explains the unanimity with which students of business look for a good first half.

It is now clear that the decline in late spring and early summer was simply a cautious inventory shuffle

by businessmen determined to be safe if and when an economic typhoon came along. Continued movement of merchandise in good volume brought these fellows out of their storm cellars to re-establish minimum necessary stocks.

Four and a half years have passed since the end of the war and it is now reasonably clear that we will not have the kind of collapse which followed the Napoleonic, the Civil, and the First World War. We are moving from a war to a peace economy by stages. Part of this may be due to the fact that the war never ended. The postwar years have slowly persuaded us that we may have been shooting at the wrong foe. In this interval the United States has devoted approximately \$25 billion to the support of nations we hope to find in our corner if and when the shooting begins again.

Another reason for our failure to repeat the pattern of other postwar years may be due to artificial supports, i.e., farm prices and government bonds. Whether the cost of such "stabilization" exceeds its value no one knows. The fact is that our postwar adjustment so far has been an orderly retreat and not a disorderly rout.

It is this concept of a continuing orderly retreat which guides our thinking for 1950. Less steel will be made in 1950 than in 1949; fewer houses built; fewer automobiles made and machine tools turned out. Farm income will be lower. Industrial profits ditto. Competition will be tougher—much tougher, but no broad-scale collapse.

Commodity prices will drop at least another 10 pct. Physical volume of business may break 160 on the F.R.B. Index, with the average for the year down less than 10 pct. In other words, 1950 will mark another stage in the return to normal.

**Stainless Steel Sales Outlook**

*Continued from Page 75*

more obnoxious to more people, stainless nail production will gain impetus. A mere 10 pct of the nail tonnage going into 1950 residential construction would be a big chunk.

**Conveyer Belts Will Help**

At the moment, the conveyer belt market looks like a cinch in certain applications. Claimed for stainless are lower initial cost, longer life in some applications and less horsepower per ton of coal moved.

While some observers see the architect's curtain wall as the future bonanza of stainless producers, some architects themselves are not so sure. Acceptance of the curtain wall is pretty well tied up with such prosaic considerations as insulation, impact resistance and union problems. On the other hand, low maintenance, decrease in dead weight, and the possibility of prefabricated sections, 20x5 ft, or 20x10-ft is tantalizing.

Costs are a big factor in the curtain wall market, but general acceptance of the stainless steel curtain wall would probably necessitate another expansion in flat-rolled capacity, and ultimately, lower costs.

**Rising Maintenance Costs Count**

Looming as a future key, not only to new markets, but to some now held by alloy and carbon products, is the high cost of maintenance, a factor that already has management in many industries burning up the slide rules.

Salespeople think the real test of the stainless market may come in the second half of this year, when a downturn in business or some other market depressant may discourage some of the new consumers. Costs, it is pointed out, might turn them temporarily in other directions, but stainless has never yet lost an important market once it gained a foothold. Whether the new applications and customers will offset a possible drop is something the long-haired boys are already busily debating, but the best guess is that they will.

*Resume Your Reading on Page 75*



## Republic Says Pensions Will Cost \$9.1 Million Each Year

**Cleveland**—Average annual cost of Republic Steel Corp.'s new pension plan will be \$9,100,000 for the 5-year term of the agreement, according to a Republic proxy statement mailed to stockholders this week.

However, if Congress should increase Federal Social Security benefits, at the next session, cost of the plan will be reduced. While the pension agreement is for 5 years, it can be terminated by the company at the end of 2 years, and in this case, the pension cost for each of the 2 years would be \$13,700,000, the proxy statement pointed out.

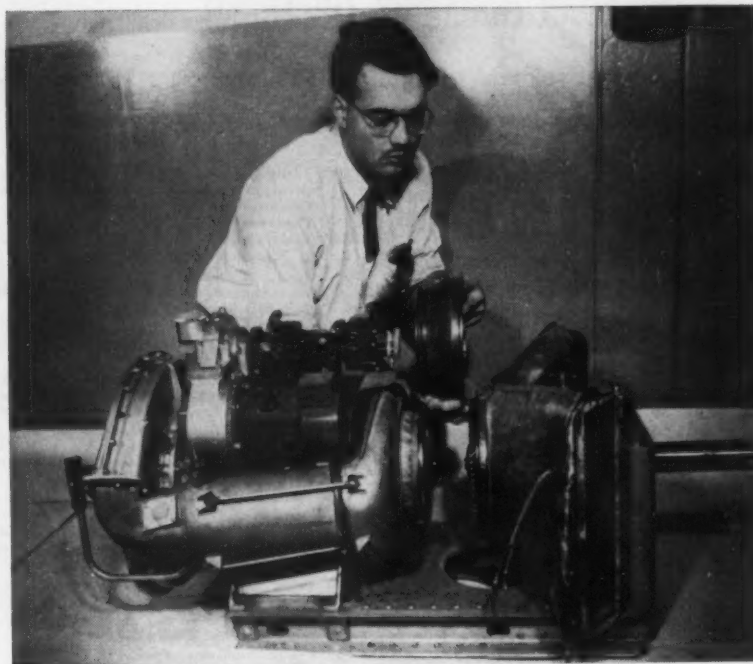
A special meeting of stockholders to consider the pension plan, recently signed by Republic and the United Steelworkers of America, was called for Feb. 21, 1950, at the company's principal office in Flemington, N. J.

### Urges Stockholders' Acceptance

"Since most of the competitors of the corporation," the proxy statement said, "have agreed to establish substantially similar plans as to wage-roll employees, failure to adopt a plan of the kind here proposed to the extent that it covers such employees may result in a loss to competing companies of a portion of the corporation's skilled working force—or even worse, may result in a curtailment or stoppage of production.

Under the plan proposed by Republic a trust fund will be created under a trust agreement, under which the Cleveland Trust Co. will be given power to invest the trust funds, subject to the control of the board of directors and a three-man pension committee which the company will appoint.

In its proxy statement, which recommended approval of the plan, Republic told the stockholders that the company has more than 58,000 full-time employees who might qualify under the pension plan. Of this total nearly 51,000 are wage-roll employees and about 7500 are salaried employees.



## Junk Your Engine, Mister?

**Seattle**—The jet-type engine may one day replace the conventional reciprocating engine in many land and water vehicles, says Boeing Airplane Co.'s engineering vice-president, Edward C. Wells. It may begin to supplant the piston engine in pleasure cars in 10 years, he predicts.

Mr. Well's observations appeared in the latest "Boeing Magazine." He described two models which have already passed the experimental stage. They are not ready for large-scale production, he said, but they are in shape for service tests under controlled conditions in some industrial jobs.

The Model 502, which develops 180-lb thrust, weighs but 185 lb, or about a pound per hp. A diesel engine of the same power weighs 2850 lb.

As this photo shows, there is no mechanical connection between the power generating and the power output section of this Boeing gas turbine. Instead, the connection resembles the torque converters now used in the auto industry.

## McLouth's Trenton Plant Making About 900 Tons a Day

**Trenton, Mich.**—The new hot strip mill at the Trenton plant of McLouth Steel Corp., Detroit, is now operating. Trade sources indicate the installation is producing about 900 tons per day.

Construction on the Trenton mill was started about 15 months ago. Two 60-ton electric furnaces were

purchased from War Assets Administration and moved from Indiana Harbor to Trenton. This capacity has been doubled by the purchase of two other electric furnaces.

Other newly installed equipment includes a blooming mill, soaking pit, hot strip mill and finishing departments. When full production is reached, the company expects to employ about 700.



## Structural Steel Bookings Decrease

**November bookings totaled 101,583 tons . . . Shipments reported 5.6 pct lower than corresponding 1948 period.**

**New York**—The estimated total bookings of fabricated structural steel for the month of November, according to reports received by the American Institute of Steel Construction, Inc., totaled 101,583 tons. The 11 months' total amounted to 1,306,370 tons compared with 1,796,216 tons reported for the corresponding months of 1948.

November shipments continued low at 112,265 tons as a result of the steel strike. The 11 months' shipments totaled 1,710,797 tons, a decrease of 5.6 pct from the 1,811,532 tons shipped in the same period of 1948.

The backlog (tonnage available for future fabrication) for the next 4 months only, stands at 527,164 tons.

Following is the complete tabulation of bookings and shipments:

Estimated Total Tonnage for the Entire Industry			
	1949	1948	Avg. 1936/1940
<b>CONTRACTS CLOSED</b>			
Jan.	130,418	160,634	107,578
Feb.	108,764	130,119	96,280
Mar.	149,079	213,123	124,558
Apr.	98,802	154,082	110,783
May	116,975	141,764	126,237
June	96,952	162,367	125,835
July	126,255	177,687	152,481
Aug.	98,953	172,485	113,135
Sept.	120,373	180,422	137,982
Oct.	158,216*	162,739	141,557
Nov.	101,583	140,794	129,757
Totals	1,306,370	1,796,216	1,366,183
<b>SHIPMENTS</b>			
Jan.	152,746	146,363	92,578
Feb.	145,879	141,556	88,626
Mar.	185,885	167,029	115,031
Apr.	179,206	166,687	123,650
May	171,101	186,915	123,225
June	172,260	157,109	129,969
July	147,960	160,780	127,422
Aug.	183,868	176,306	136,389
Sept.	162,139	174,967	137,255
Oct.	97,488*	164,024	140,944
Nov.	112,265	169,796	127,873
Totals	1,710,797	1,811,532	1,342,962
<b>TONNAGE AVAILABLE FOR FABRICATION WITHIN THE NEXT 4 MONTHS</b>			
	527,164	627,550	350,268

\*Revised

**Fabricated steel awards this week included the following:**

- 11,000 Tons, Portland, Ore., steel towers for Bonneville Power Administration, Inv. 4900, to American Bridge Co., San Francisco.
- 3000 Tons, Calumet City, Ill., bridge for Calumet Parkway, Illinois State Highway Commission, to American Bridge Co., Pittsburgh.

- 1100 Tons, Calumet City, Ill., two bridges for Calumet Parkway, Illinois State Highway Commission, to American Bridge Co., Pittsburgh.
- 900 Tons, Chicago, Presbyterian Nurses' home, to American Bridge Co., Pittsburgh.
- 830 Tons, Riverdale, N. D., Garrison Dam construction trestle, to American Bridge Co., Pittsburgh.
- 600 Tons, Delair, N. J., extension to plant, Kieckhefer Container Co., to Bethlehem Fabricators, Inc., Bethlehem.
- 565 Tons, Indianapolis, addition to Indiana National Bank building, to Hetherington & Berner, Inc., Indianapolis.
- 500 Tons, Los Angeles, stadium at East Los Angeles College, through V. O. Brunzell Co., Gardena, to Ceco Steel Products Corp., Los Angeles.
- 410 Tons, Skokie, Ill., Eden's Parkway overpass, to American Bridge Co., Pittsburgh.
- 375 Tons, Scranton, Pa., warehouse building, International Textbook Co., to Anthracite Bridge Co., Scranton, Pa.
- 325 Tons, Skokie, Ill., Eden's Parkway overpass, to American Bridge Co., Pittsburgh.
- 315 Tons, Orrin, Wyo., bridge to Midwest Steel & Iron Works Co., Denver.
- 255 Tons, Highland Park, Ill., Ravinia Pavilion, to American Bridge Co., Pittsburgh.
- 240 Tons, Lincolnwood, Ill., Eden's Parkway overpass to American Bridge Co.
- 225 Tons, Larimer County, Colo., bridge to Midwest Steel & Iron Works Co., Denver.
- 220 Tons, Skokie, Ill., Eden's Parkway overpass to American Bridge Co., Pittsburgh.
- 195 Tons, Lowell, Mass., 3-span steel stringer bridge through Coleman Brothers Corporation, Boston, to Groussier and Shlager Iron Works, Somerville, Mass. Completion date Nov. 15, 1950.
- 185 Tons, Mesa and Coolidge, Ariz., substation structures, to Independent Tubular Equipment Co., Los Angeles.
- 180 Tons, Philadelphia, theater building, to Lehigh Structural Steel Co., New York.
- 150 Tons, Gary, Ind., Pulaski School addition, to American Bridge Co., Pittsburgh.
- 125 Tons, Ellis, Kan., bridge in connection with Cedar Bluff Dam, to Kansas City Structural Steel Co., Kansas City, Kan.
- 100 Tons, Fort Wayne, Ind., bridge to American Bridge Co., Pittsburgh.

**Fabricated steel inquiries this week included the following:**

- 1260 Tons, Schuylkill County, Pa., underpass and bridge, State Highway & Bridge Authority, Harrisburg. Bids to Jan. 27, 1950.
- 950 Tons, Schuylkill County, Pa., bridge, Pennsylvania Dept. of Highways, due Jan. 27.
- 775 Tons, Beaver County, Pa., bridge, Section 29(e), Pennsylvania Turnpike Authority, due Jan. 31.
- 300 Tons, Beaver County, Pa., bridge, Section 29(d), Pennsylvania Turnpike Authority, due Jan. 31.
- 250 Tons, Butler County, Pa., bridge, Section 30(b), Pennsylvania Turnpike Authority, due Jan. 31.
- 195 Tons, Burlington, Mass., circumferential highway, bituminous concrete surfacing and two bridges. Completion date Nov. 30, 1950. Fred D. Sabin, Cambridge, district engineer.
- 150 Tons, Beaver County, Pa., bridge, Section 30(a), Pennsylvania Turnpike Authority, due Jan. 31.
- 125 Tons, Lancaster, Pa., boiler house, Armstrong Cork Co., due Jan. 16.
- 125 Tons, Phoenix, Ariz., construction of Phoenix-Rock Springs Highway, State Highway Commission, Phoenix, bids to Jan. 13.

- 120 Tons, Philadelphia, Tabor Ave. bridge, City of Philadelphia, due Jan. 20.

**Reinforcing bar awards this week included the following:**

- 700 Tons, Los Angeles, stadium at East Los Angeles College, through V. O. Brunzell Co., Gardena, to Ceco Steel Products Corp., Los Angeles.
- 590 Tons, Philadelphia, Youth Study Center, McCloskey & Co., Philadelphia, low on rebidding.
- 370 Tons, Bellevue, Neb., power station, to Bethlehem Steel Co., Bethlehem.
- 355 Tons, Lake County, Ind., bridge contract 3139, to Calumet Steel Co., Chicago Heights, Ill., through E. W. Zimmerman.
- 135 Tons, Evanston, Ill., addition to Evanston High School, to O. J. Dean Steel Co., Chicago.

**Reinforcing bar inquiries this week included the following:**

- 1300 Tons, Elrama, Pa., power station.
- 1225 Tons, Los Angeles, improvements to Los Angeles River, Los Angeles District, Corps of Engineers, Serial No. 04-353-50-16, bids to Jan. 18.
- 1110 Tons, Indianapolis, building for Equitable Life Assurance Society.
- 690 Tons, New Castle City, Lawrence County, Pa., construction of reinforced concrete arch and reinforced concrete bridge, State Highway and Bridge Authority. Bids close Jan. 20, 1950.
- 690 Tons, Covington, Ky., flood protection walls.
- 690 Tons, New Castle City, Lawrence County, Pa., construction of reinforced concrete arch and reinforced concrete bridge, Pennsylvania Highway and Bridge Authority. Bids close Jan. 20.
- 580 Tons, Allegheny County, Pa., highway work on Route 763 and 120.
- 580 Tons, Chicago, warehouse for Admiral Corp.
- 390 Tons, Schuylkill County, Pa., underpass and bridge, State Highway & Bridge Authority, Harrisburg. Bids to Jan. 27.
- 365 Tons, Hershey, Pa., building for Hershey Chocolate Co.
- 345 Tons, Denver, construction of Olympus siphon, etc., Bureau of Reclamation, Denver, Spec. 2871, bids to Jan. 19.
- 330 Tons, Shelton and Derby, Conn., reinforced concrete deck.
- 330 Tons, Shelton and Derby, Conn., reinforced concrete deck.
- 240 Tons, Uhrichsville, Ohio, sewage disposal plant.
- 195 Tons, Chicago, J. C. Penney store.
- 135 Tons, Evanston, Ill., addition to Evanston High School, Peter Hamlin Construction Co., Contractor.
- 120 Tons, Duluth, Minn., Piedmont School.
- 110 Tons, Dover, Ohio, Union Hospital.
- 105 Tons, Pontiac, Ill., power house for state penitentiary.
- 105 Tons, Burlington, Mass., circumferential highway, bituminous concrete surfacing and two bridges. Completion date Nov. 30, 1950.
- 100 Tons, Carbon County, Pa., construction of continuous plate girder and concrete deck I-beam bridge, Pennsylvania Highway and Bridge Authority. Bids close Jan. 20.
- 100 Tons, Carbon County, Pa., construction of continuous plate girder and concrete deck I-beam bridge. State Highway and Bridge Authority. Bids close Jan. 20, 1950.

**Steel plate awards this week included the following:**

- 1250 Tons, Riverdale, N. D., Garrison Dam intake, to Consolidated Western Steel Corp., Los Angeles.

# MARKET

IRON AGE  
FOUNDED 1855  
MARKETS & PRICES

## Briefs and Bulletins

**titanium tubing**—Welded titanium tubing is now offered in sizes from  $\frac{3}{4}$  in. diam x 0.049 in. wall thickness down to  $\frac{1}{8}$ -in. diam x 0.010-in. wall. The tubing is offered annealed, half hard or hard drawn by Superior Tube Co., Norristown, Pa. Welding is done by an inert arc process, with a vacuum anneal and standard techniques for drawing. The company expects that heavier wall thicknesses will soon be offered. Seamless tubing will be offered later on.

**follansbee sells plant**—The Toronto, Ohio, plant and equipment of Follansbee Steel Corp. has been sold to Kovalchick Industries, Inc., of Indiana, Pa., and Sykesville, Pa. M. A. Follansbee, president of Follansbee, Steel, and Nick Kovalchick, president of Kovalchick industries, announced the transaction in a joint statement. Follansbee is concentrating its operations at its Follansbee, W. Va., plant and will continue to serve its customers as in the past.

**freight cars**—Domestic freight car deliveries during December totaled 3330, according to the American Railway Car Institute. This compares with 4376 in November and 9967 in December 1948. Deliveries for the year were 92,562. New cars ordered during December totaled 1220. The annual figure for new car orders was 6248, compared with 92,787 in 1948. The backlog of unfilled orders on Jan. 1 was 12,036, compared with 103,896 a year earlier.

**world steel**—Canadian steel production for 1949 was inadvertently omitted from the compilation of world steel production appearing in THE IRON AGE, Jan. 5, p. 166. Canadian output of 3,211,000 net tons added to the figures shown in the table brings 1949 world steel output to 168,184,000 net tons.

**in blast**—Pittsburgh Steel Co. will put its No. 1 blast furnace at Monessen, Pa., back into production in mid-January. With a rated capacity of 600 tons per day, the furnace has been idle since last Apr. 17. No. 3 furnace, which has been operating steadily, produces 1200 tons per day.

**no-day week**—Coal miners in western Pennsylvania and West Virginia went on a no-day week strike last Monday and Tuesday. There was no official strike call, but United Mine Workers members in mines of Pittsburgh Consolidation Coal Co. and "captive" pits of U. S. Steel Corp., Weirton Steel, Youngstown Sheet & Tube, Republic, Sharon Steel, and Jones & Laughlin were struck. Bethlehem Steel Corp. mines had not been affected Tuesday morning. An estimated 45,000 miners, most of whom had been working a 3-day week, were out in seven states.

**galvanized core wire**—American Steel & Wire Co., has increased the price of galvanized core wire \$7 per ton. The wire is sold on a bright wire base, with galvanizing extras added to arrive at the net price.

**fasteners**—Major manufacturers of bolts, nuts, rivets, set screws, etc., have raised prices following steel cost increases and higher delivery charges.

**tool steel prices**—The major tool steel producers have announced increases of 10 pct in tool and high speed steel prices, on both base and extras. These include Allegheny Ludlum, Crucible, Latrobe Electric, Firth-Sterling, Jessop and Vanadium Alloy.



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
January 1.....	96.5*	98.0*	84.0	88.0*	100.5*	103.5	102.5	101.0	105.0*	87.0*	88.0	89.5	96.0	96.0*
January 8.....	96.5	97.5	85.0	88.0	100.0	103.5	101.0	102.0	101.0	97.0	88.0	89.5	95.5	97.0

\* Revised.

January 12, 1950

# Nonferrous METALS OUTLOOK

## Market Activities

**RFC and Bolivians not negotiating tin concentrates contract . . . Spread continues in zinc . . . Lead imports high in 11 months . . . Copper demand continues active.**

by

*John Anthony*



New York—Negotiations between RFC and Bolivian producers on a new contract for tin concentrates for shipment during 1950 have broken down. So far information in the trade indicates that there has been no meeting of the minds on contract provisions. The price paid by RFC in the past for concentrates has been based on Grade A tin at New York, which has dropped rapidly in recent months.

This situation presents a political problem to the government. Bolivia's economy is based very largely on the sale of tin to the U. S. and United Kingdom governments. A drastic reduction of the return on concentrates to the Bolivian economy might cause political repercussions in that country. And the Bolivian concentrates are needed for the operation of the Texas City smelter. Continued operation of Bolivian mines is considered necessary to assure U. S. tin output at the smelter in the event of war.

RFC announced a tin price of 77.00¢ on Jan. 9. In the outside market, mid-January arrivals can be had at 76.50¢; and late January at 75.50¢. The British Ministry of Supply is still attempting to support the tin market. It is offering

## NONFERROUS METALS PRICES

	Jan. 4	Jan. 5	Jan. 6	Jan. 7	Jan. 9	Jan. 10
Copper, electro, Conn. ....	18.50	18.50	18.50	18.50	18.50	18.50
Copper, Lake, Conn. ....	18.625	18.625	18.625	18.625	18.625	18.625
Tin, Straits, New York ....	77.50	77.50	77.50	77.50	77.00	77.00
Zinc, East St. Louis ....	9.75-10.00	9.75-10.00	9.75-10.00	9.75-10.00	9.75-10.00	9.75-10.00
Lead, St. Louis ....	11.80	11.80	11.80	11.80	11.80	11.80

Note: Quotations are going prices.

spot (2 weeks delivery) at 77.00¢ and three months at 75.00¢. April delivery can be had on the outside market at about 74.25¢.

### Spread Continues in Zinc

Early this week the spread in the price of zinc continued. Several factors continue to offer zinc at 9.75¢. But others are selling some zinc at 10.00¢ and on the monthly average price. Some factors indicate that there is considerable demand for zinc and they expect to see the low offerings cleaned up soon. Others do not expect the demand to be sufficient to hold the higher price.

Whatever tightness there is in the zinc market is due to strikes and their aftermath, and the current relatively low price. The Palmerton strike is still under way. The Bunker Hill zinc smelter is not expected to operate at capacity un-

til the latter part of the month. Outside concentrates have been bought to keep the plant operating as full as possible.

How the spread in the price of zinc will be resolved will depend pretty largely on the outcome of the move to reduce coal mine production.

### Lead Imports Increase

Lead is still coming into the country from abroad to be offered below the domestic market price. But sales by domestic producers continue fair. Imports of metal in the first 11 months total 254,355 tons.

The copper market is still very active. Sales for December shipment reached 113,000 tons. Sales for January shipment have reached 84,000 tons so far. January is also expected to exceed 100,000 tons.



## Mill Products

### Aluminum

(Base prices, cents per pound, base 30,000 lb. f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: 1/4 in. and heavier: 2S, 3S, F, 23.5¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 28S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 35¢ to 64¢; 11 to 13, 34¢ to 75¢; 23 to 25, 36.7¢ to \$1.05; 35 to 37, 44¢ to \$1.53; 47 to 49, 63.5¢ to \$2.20.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 44¢ to 30.5¢; Cold-finished, 0.375 to 3 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, 1/4 to 1 1/2 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, 1/4 to 1 1/2 in., 11S-T3, 37.5¢ to 35.5¢; 3/4 to 2 in., R317-T4, 37.5¢ to 34.5¢; rolled, 1 1/2 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2 1/2 to 3 1/2 in., R217-T4, 33.5¢ to 32.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.; 2S, 34¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 44¢; 75S-T-6, 76¢ to 55¢.

### Magnesium

(Cents per lb, f.o.b. mill, freight allowed)

Sheets and Plate: Ma, FSA, 1/4 in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-72¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-1.01; 22, 1.12¢-1.31; 24, 1.16¢-1.17¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., 1/4 to 0.311, 58¢; 1/2 to 3/4, 49¢; 1 1/4 to 1.749, 43¢; 2 1/4 to 5, 41¢. Other alloys higher. Base: Up to 1/4 in. diam., 10,000 lb; 1/2 in. to 1 1/4 in., 20,000 lb; 1 1/2 in. and larger, 30,000 lb.

Extruded Square, Hex. Bar: M, size across flats, in., 1/4 to 0.311, 61¢; 1/2 to 0.749, 48¢; 1 1/4 to 1.749, 44¢; 2 1/4 to 4, 42¢. Other alloys higher. Base: Up to 1/4 in. diam., 10,000 lb; 1/2 in. to 1 1/4 in., 20,000 lb; 1 1/2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangle: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/4 lb, 10,000 lb; 1/2 lb to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam., in., 0.049 to 0.057, 1/4 to 5/16, \$1.14; 5/16 to 3/8, \$1.02; 3/8 to 1/2, 76¢; 1 to 2 in., 55¢; 0.065 to 0.082, 3/8 to 7/16, 85¢; 5/8 to 3/4, 62¢; 1 to 2 in., 57¢; 0.165 to 0.219, 5/8 to 3/4, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher. Base, OD in. in: Up to 1 1/2 in., 10,000 lb; 1 1/2 in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

### Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and bars	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks		40

### Copper, Brass, Bronze

(Cents per lb, freight prepaid on 200 lb)

	Sheets	Rods	Extruded Shapes
Copper	32.18		31.78
Copper, h-f		28.03	
Copper, drawn		29.28	
Low brass	30.12	29.81	33.03*
Yellow brass	28.69	28.38	31.70*
Red brass	30.60	30.29	33.51*
Naval brass	33.51	27.57	28.52
Leaded brass		23.19	27.22
Com'l bronze	31.61	31.30	34.27*
Manganese bronze			
Phosphor bronze	37.01	30.92	32.42
Muntz metal	50.90	51.15	
Everdur, Her-culoy, Olym-pic, etc.	37.19	36.14	
Nickel silver, 10 pct	39.66	41.87	46.80
Arch. bronze			27.22

\*Seamless tubing.

## Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	32.00
Beryllium copper, 3.75-4.25% Be, dollars per lb contained Be	\$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	\$52.00
Bismuth, ton lots	\$2.00
Cadmium, del'd	\$2.00
Cobalt, 97-99% (per lb)	\$1.80 to \$1.87
Copper, electro, Conn. Valley	18.50
Copper, lake, Conn. Valley	18.625
Gold, U. S. Treas., dollars per oz.	\$35.00
Iridium, 99.8%, dollars per troy oz.	\$2.25
Iridium, dollars per troy oz.	\$100 to \$110
Lead, St. Louis	11.80
Lead, New York	12.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, 100 to 5000 lb	
Mercury, dollars per 76-lb flask	36¢ to 38¢
Nickel, electro, f.o.b. New York	\$70 to \$73
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$69 to \$72
Silver, New York, cents per oz.	73.25
Tin, New York	77.00
Zinc, East St. Louis	9.75 to 10.00
Zinc, New York	10.72
Zirconium copper, 10-12 pct Zr, per lb contained Zr	\$12.00

## Remelted Metals

### Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	16.75-18.25
No. 120	16.25-17.75
No. 123	15.75-17.25
80-10-10 ingot	
No. 305	21.75
No. 315	19.75
88-10-2 ingot	
No. 210	27.75
No. 215	25.25
No. 245	18.25-21.00
Yellow ingot	
No. 405	14.25-16.00
Manganese bronze	
No. 421	20.75

### Aluminum Ingot

(Cents per lb, lot of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	18.50-19.00
0.60 copper, max.	18.25-18.75
Piston alloys (No. 122 type)	16.50-17.00
No. 12 alum. (No. 2 grade)	16.25-16.75
108 alloy	16.75-17.25
195 alloy	17.50-18.00
13 alloy	18.50-19.00
AXS-679	16.75-17.25
5% Ti, Aluminum, f.o.b., Eddystone, Pa.	31.00
Low copper	
2% copper	28.00

### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2%	17.75-18.50
Grade 2—92-95%	16.75-17.50
Grade 3—90-92%	15.75-16.50
Grade 4—85-90%	15.25-15.75

## Electroplating Supplies

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	35 1/2
Electrodeposited	29 1/2
Rolled, oval, straight, delivered	33
Ball anodes	33 1/2
Brass, 80-20	
Cast, oval, 15 in. or longer	31 1/2
Zinc, oval, 99.856, f.o.b. Detroit	17 1/2
Ball anodes	16 1/2
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	\$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79

## Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	46 1/2
Copper sulfate, 99.5 crystals, bbl.	11.10
Nickel salts, single or double, 4-100 lb bags, frt allowed	18.00
Nickel chloride, 300 lb bbl.	24.50
Silver cyanide, 100 oz bbl., per oz.	59
Sodium cyanide, 96 pct domestic	
200 lb drums	19.25
Zinc sulfate, 89 pct granular	11.00
Zinc cyanide, 100 lb drums	38.00

## Scrap Metals

### Brass Mill Scrap

(Cents per pound; add 1/2¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Turns-Heavy
Copper	15 1/2 14 1/2
Yellow brass	12 1/2 11 1/2
Red brass	14 13 1/2
Commercial bronze	14 1/2 13 1/2
Manganese bronze	12 11 1/2
Leaded brass rod ends	12 1/2

### Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	15.50
No. 2 copper wire	14.50
Light copper	13.50
Refinery brass	13.75*
Radiators	9.75

\*Dry copper content.

### Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	15.50
No. 2 copper wire	14.50
Light copper	13.50
No. 1 composition	12.75
No. 1 comp. turnings	12.25
Rolled brass	10.75
Brass pipe	11.00
Radiators	10.00
Heavy yellow brass	9.75

Mixed old cast	10.00-10.50
Mixed old clips	10.00-10.50
Mixed turnings, dry	8.50-9.00
Pots and pans	10.00-10.50
Low copper	11.50-12.00

### Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

	Copper and Brass
No. 1 heavy copper and wire	13 1/2-14
No. 2 heavy copper and wire	12 1/2-13
Light copper	11 1/2-12
Auto radiators (unsweated)	8 1/2-8 3/4
No. 1 composition	11-11 1/2
No. 1 composition turnings	10 1/2-10 3/4
Clean red car boxes	9-9 1/4
Cocks and faucets	9-9 1/4
Mixed heavy yellow brass	7 1/2-7 3/4
Old rolled brass	8 1/2-8 3/4
Brass pipe	9 1/4-9 1/2
New soft brass clippings	10 1/2-11
Brass rod ends	9 1/2-10
No. 1 brass rod turnings	9 1/2-9 3/4

### Aluminum

Alum. pistons and struts	4 1/2-5
Aluminum crankcases	7 1/2-8
2S aluminum clippings	10 1/2-11
Old sheet and utensils	7 1/2-8
Borings and turnings	7 1/2-8
Misc. cast aluminum	7 1/2-8
Dural clips (24S)	7 1/2-8

### Zinc

New zinc clippings	6 1/2-7
Old zinc	4-4 1/2
Zinc routings	2 1/2-3
Old die cast scrap	3 1/2-3 3/4

### Nickel and Monel

Pure nickel clippings	21-23
Clean nickel turnings	14-15
Nickel anodes	20-22
Nickel rod ends	20-22
New Monel clippings	12-14
Clean Monel turnings	8-9
Old sheet Monel	10-12
Old Monel castings	9-10
Inconel clippings	11-13
Nickel silver clippings, mixed	8-10
Nickel silver turnings, mixed	6-7

### Lead

Soft scrap, lead	9 1/2-9 3/4
Battery plates (dry)	4 1/2-4 3/4
Segregated solids	9-10
Castings	5 1/2-6 1/2

### Miscellaneous

Block tin	60-62
No. 1 pewter	38-40
No. 1 auto babbitt	35-37
Mixed common babbitt	9-9 1/2
Solder joints	11 1/2-12
Siphon tops	40-42
Small foundry type	11 1/2-12
Monotype	10 1/2-11
Lino. and stereotype	9 1/2-10 1/4
Electrotype	8 1/2-8 3/4
New type shell cuttings	11 1/2-11 3/4
Hand picked type shells	4-4 1/2
Lino. and stereo. dross	4 1/2-5
Electro. dross	2 1/2-3

MARKETS—PRICES—TRENDS



# SCRAP

## Iron & Steel

### Downward Spiral Slows; Little Mill Buying

There were some indications that the downward trend of the market has been halted. There were price declines, but the drops were not as sharp as during the past 6 weeks. The trade is still waiting for greater mill participation which usually is an important factor at this time of the year. Some mills have been placing small orders, but do not seem too anxious at present to buy sizeable tonnages.

A buyers' market has also overtaken the selling of scrap. Mills have become more selective in their purchases. Many cars of off-specification scrap have been rejected by some of the mills. Other mills have warned that overshipment will result in turning back cars.

For the first time in over a month one of the major markets registered a price increase in No. 1 steel. In Chicago the top quotation of No. 1 steel was up \$1.00; in Philadelphia, Buffalo and Boston it was off 50¢; and in Detroit it was off \$1.00. THE IRON AGE scrap composite is up 17¢ a ton to \$26.42 per gross ton.

**PITTSBURGH** — Purchases by several mills confirmed the going price of No. 1 heavy melting steel at \$30.00. There was little other activity. Some interests look

for prices to firm later this month. Machine shop turnings were off \$1.00 to a top of \$21.00, and shoveling turnings declined \$1.00 to \$25.00.

**CHICAGO**—The scrap market here is beginning to show a very small amount of life. Blast furnace grades, in particular, are showing signs of strength. Foundry scrap and railroad specialties, which have been very weak, have also picked up a little. Sizeable tonnages of scrap are not yet moving, since the big mills are still satisfying their needs mostly from inventory and with scrap from customers' plants. But the feeling is growing that they can't keep up their current operating rate much longer without taking more scrap from the open market.

**PHILADELPHIA**—One consumer bought a small tonnage of heavy melting grades here, establishing a 50¢ drop in No. 1 steel and No. 2 bundles, and a \$1.00 drop in No. 2 steel. There was very little activity in the market otherwise. The cast market was softer, with reductions of \$1.00 in breakable and yard cast. The quotation for yard cast in last week's issue, quoted in error, should have read \$32.00 to \$33.00. A survey of local yards shows heavy tonnages of bundles in several yards but very little cast. Information from the trade indicates shipments of several thousand tons of No. 2 steel to the West recently.

**NEW YORK**—The market continues inactive here with all movements below normal. Some mills have released shipments on old orders which have been held up since last month. At present there is little new business to speak of. It is expected that the mills will enter the market here within the next few weeks to replenish their inventories. On new business there has been no attempt to bid down prices on the steelmaking grades.

**DETROIT**—There are indications this week that the downward spiral in local scrap prices may soon be brought to a halt. While this week's quotations for some grades are \$1.00 lower than prices quoted in IRON AGE the previous week, other grades are holding at earlier levels. It is clear that the threat of a coal strike may be an important factor determining whether prices are destined to peg at the present level or even increase as mills attempt to conserve coal by substituting scrap for hot metal.

**CLEVELAND** — A subdued and unchanged scrap market prevailed here and in the Valley this week. Mills are out of the market except for spot tonnages and temporarily, prices seem to be pretty well established at present levels. No. 2 steel and No. 2 bundles are weak, however. Brokers are covering readily with mill inventories precluding a general buying movement before February or possibly March. Brunt of the inactivity will probably be borne by the dealer grades, as it is unlikely that any serious attempt will be made to knock down the price of factory material.

**BOSTON**—Business is off here and the tendency is toward the weak side. Absence of continued consumer demand was responsible for the drop with No. 1 heavy melting steel off 50¢ on the top side. Other items on the downside were bundles, turnings and bushelings. The cast market is stagnant with no activity in any of the items.

**BUFFALO**—The leading consumer of scrap in the area lifted the embargo on shipment during the week, but easier tendencies dominate the market. While new business was restricted to light tonnages, prices skidded from 50¢ to \$1.00 a ton as dealers showed a willingness to sell at the lower levels. Mild open weather has spurred the movement of material. The three top mill consumers in the area now have approximately 175,000 tons on hand. This theoretically assured the mills of adequate stock until spring which is also a bearish price factor. In addition to reserve stock, mills also have more than 30,000 tons outstanding in orders.

**CINCINNATI**—Price weakness in the foundry grades highlighted a soft and inactive scrap market here. With mill interest focused on the No. 1 grades, in some cases due to unbalanced inventory, No. 2 steel, No. 2 bundles and other dealer grades are very weak. A certain amount of reluctant buying by mills plus the anticipation that mills will soon come in for their February requirements are primary factors in sustaining the present price stability in the openhearth grades.

**ST. LOUIS**—A district steel mill has issued what it calls a token order for 4000 tons of No. 2 heavy melting steel, no more than 500 tons to a broker, at \$25.00, but it is not likely to be filled until outstanding orders at a higher price of another mill are completed. In filling the latter order brokers have cut their buying price \$1.00 a ton.

**BIRMINGHAM**—Blast furnace and cast grades are in moderate demand here but there's little interest being shown at present for other material. Electric furnace grades are particularly weak. Scrap buyers generally are wary of overshipments and in several instances reportedly have warned that overshipments will result in the turning back of cars.

# HOW CAN SCRAP MEET THE CHALLENGE OF 1950?

Economists have been practically unanimous in forecasting good business in 1950. Not another 1948—who wants one?—but a good year judged by pre-war standards.

This implies a satisfactory rate of operations at steel mills and foundries. It puts a heavy responsibility on the scrap industry to provide an adequate supply of good quality scrap for them.

This requires not only basic know-how but also organized effort to achieve and maintain satisfactory consumer, industrial, and public relations.

Through the Institute of Scrap Iron & Steel Inc. the scrap industry is organized. The more than one thousand members of the Institute in all parts of the country comprise dealers and brokers who have a sense of responsibility and an industry consciousness.

These dealers and brokers, meeting at the annual convention of the Institute in Washington Jan. 22-24, will consider how they can do the job in 1950. Their discussions will revolve around the theme—

## *A Blueprint for the Scrap Industry for 1950: Improved Consumer, Public and Personal Relations.*

The annual conventions of the Scrap Institute afford a meeting place for the industry. There will be good fellowship and relaxation, to be sure, but primarily the conventions are designed to put a working tool—in this case a detailed blueprint—in the hands of dealers and brokers so they can meet the challenge of 1950.

Responsible dealers and brokers who have never been solicited for membership are invited to inquire concerning membership and attendance at the convention.

**THE INSTITUTE OF SCRAP IRON & STEEL INC.**  
**1346 Connecticut Avenue N. W.**  
**Washington 6, D. C.**

**ANNUAL CONVENTION—HOTEL STATLER, WASHINGTON, D. C., JAN. 22-24**

(This space made available to the Scrap Institute by The Iron Age)



### Pittsburgh

No. 1 hvy. melting	\$29.50 to \$30.00
No. 2 hvy. melting	27.50 to 28.00
No. 1 bundles	29.50 to 30.00
No. 2 bundles	23.50 to 24.00
Machine shop turn.	20.50 to 21.00
Mixed bor. and ms. turns.	20.50 to 21.00
Shoveling turnings	24.50 to 25.00
Cast iron borings	24.50 to 25.00
Low phos. plate	32.00 to 32.50
Heavy turnings	25.00 to 26.00
No. 1 RR. hvy. melting	31.50 to 32.00
Scrap rails, random lgth.	35.50 to 36.50
Rails 2 ft and under	38.00 to 39.00
RR. steel wheels	34.50 to 35.00
RR. spring steel	34.50 to 35.00
RR. couplers and knuckles	34.50 to 35.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	34.00 to 35.00
Heavy breakable cast.	28.00 to 29.00
Malleable	33.00 to 34.00

### Chicago

No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 factory bundles	26.00 to 27.00
No. 1 dealers' bundles	22.00 to 23.00
No. 2 dealers' bundles	20.00 to 21.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	19.00 to 20.00
Low phos. forge crops	31.00 to 32.00
Low phos. plate	29.00 to 30.00
No. 1 RR. hvy. melting	29.00 to 30.00
Scrap rails, random lgth.	35.00 to 36.00
Rerolling rails	39.00 to 40.00
Rails 2 ft and under	38.00 to 39.00
Locomotive tires, cut	33.00 to 34.00
Cut bolsters & side frames	31.00 to 32.00
Angles and splice bars	31.00 to 32.00
RR. steel car axles	40.00 to 41.00
RR. couplers and knuckles	32.00 to 33.00
No. 1 machinery cast.	38.00 to 39.00
No. 1 agricul. cast.	37.00 to 38.00
Heavy breakable cast.	31.00 to 32.00
RR. grate bars	26.00 to 27.00
Cast iron brake shoes	30.00 to 31.00
Cast iron car wheels	35.00 to 36.00
Malleable	36.00 to 37.00

### Philadelphia

No. 1 hvy. melting	\$22.50 to \$23.50
No. 2 hvy. melting	20.50 to 21.50
No. 1 bundles	22.50 to 23.50
No. 2 bundles	17.50 to 18.50
Machine shop turn.	15.50 to 16.50
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	16.50 to 17.00
Low phos. punchings, plate	25.50 to 26.50
Low phos. 5 ft and under	24.50 to 25.50
Low phos. bundles	24.50 to 25.50
Hvy. axle forge turn.	22.50 to 23.50
Clean cast chem. borings	28.00 to 29.00
RR. steel wheels	28.00 to 29.00
RR. spring steel	28.00 to 29.00
Rails 18 in. and under	36.00 to 38.00
No. 1 machinery cast.	36.00 to 38.00
Mixed yard cast.	31.00 to 32.00
Heavy breakable cast.	33.00 to 34.00
Cast iron car wheels	37.00 to 38.00
Malleable	39.00 to 40.00

\*Jan. 5 quotation should have read 32.00 to 33.00.

### Cleveland

No. 1 hvy. melting	\$28.00 to \$28.50
No. 2 hvy. melting	26.00 to 26.50
No. 1 busheling	28.00 to 28.50
No. 1 bundles	28.00 to 28.50
No. 2 bundles	23.50 to 24.00
Machine shop turn.	18.00 to 18.50
Mixed bor. and turn.	19.50 to 20.00
Shoveling turnings	19.50 to 20.00
Cast iron borings	19.50 to 20.00
Low phos. 2 ft and under	29.00 to 29.50
Steel axle turn.	27.00 to 27.50
Drop forge flashings	28.00 to 28.50
No. 1 RR. hvy. melting	31.50 to 32.00
Rails 3 ft and under	43.00 to 44.00
Rails 18 in. and under	44.00 to 45.00
No. 1 machinery cast.	42.00 to 43.00
RR. cast	42.00 to 43.00
RR. grate bars	30.00 to 31.00
Stove plate	34.00 to 35.00
Malleable	38.00 to 39.00

### Youngstown

No. 1 hvy. melting	\$30.50 to \$31.00
No. 2 hvy. melting	28.50 to 29.00
No. 1 bundles	30.50 to 31.00

## Scrap IRON & STEEL Prices

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

No. 2 bundles	\$25.50 to \$26.00
Machine shop turn.	20.50 to 21.00
Shoveling turnings	22.00 to 22.50
Cast iron borings	22.00 to 22.50
Low phos. plate	31.50 to 32.00

### Buffalo

No. 1 hvy. melting	\$27.50 to \$28.00
No. 2 hvy. melting	25.50 to 26.00
No. 1 busheling	25.50 to 26.00
No. 1 bundles	26.50 to 27.00
No. 2 bundles	24.00 to 24.50
Machine shop turn.	18.00 to 18.50
Mixed bor. and turn.	19.00 to 19.50
Shoveling turnings	20.50 to 21.00
Cast iron borings	19.50 to 20.00
Low phos. plate	29.00 to 29.50
Scrap rails, random lgth.	33.50 to 34.00
Rails 2 ft and under	38.50 to 39.00
RR. steel wheels	33.00 to 33.50
RR. spring steel	33.00 to 33.50
RR. couplers and knuckles	33.00 to 33.50
No. 1 machinery cast.	36.00 to 36.50
No. 1 cupola cast.	33.50 to 34.00
Stove plate	32.50 to 33.00
Small indus. malleable	30.00 to 30.50

### Birmingham

No. 1 hvy. melting	\$25.00
No. 2 hvy. melting	24.00
No. 2 bundles	22.00
No. 1 busheling	24.00
Machine shop turn.	\$16.00 to 17.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	18.00
Bar crops and plate	28.00 to 29.00
Structural and plate	28.00 to 29.00
No. 1 RR. hvy. melt.	26.00 to 27.00
Scrap rails, random lgth.	30.00 to 31.00
Rerolling rails	33.00 to 35.00
Rails 2 ft and under	35.50 to 36.00
Angles & splice bars	35.00 to 36.00
Std. steel axles	28.00 to 29.00
No. 1 cupola cast.	36.00 to 37.00
Stove plate	29.00 to 30.00
Cast iron car wheels	28.00 to 29.00

### St. Louis

No. 1 hvy. melting	\$30.00 to \$31.00
No. 2 hvy. melting	25.00 to 26.00
No. 2 bundled sheets	25.00 to 26.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	20.00 to 21.00
Rails, random lengths	32.00 to 33.00
Rails 3 ft and under	36.00 to 37.00
Locomotive tires, uncut	27.00 to 28.00
Angles and splice bars	34.00 to 35.00
Std. steel car axles	39.00 to 41.00
RR. spring steel	31.00 to 32.00
No. 1 machinery cast.	36.00 to 37.00
Hvy. breakable cast.	30.00 to 31.00
Cast iron brake shoes	30.00 to 31.00
Stove plate	30.00 to 31.00
Cast iron car wheels	34.00 to 35.00
Malleable	28.00 to 30.00

### New York

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$19.00 to \$19.50
No. 2 hvy. melting	17.75 to 18.00
No. 2 bundles	16.50 to 17.00
Machine shop turn.	10.50 to 11.00
Mixed bor. and turn.	10.50 to 11.00
Shoveling turnings	11.50 to 12.00
Clean cast chem. bor.	23.00 to 24.00
No. 1 machinery cast.	27.50 to 28.50
Mixed yard cast.	26.50 to 27.00
Charging box cast.	26.50 to 27.00
Heavy breakable cast.	26.50 to 27.00
Unstrp. motor blocks	22.00 to 23.00

### Boston

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$18.00 to \$18.50
No. 2 hvy. melting	16.50 to 17.00
No. 1 bundles	18.00 to 18.50

No. 2 bundles	\$13.50 to \$14.00
Machine shop turn.	9.50 to 10.00
Mixed bor. and turn.	9.50 to 10.00
Shoveling turnings	12.00 to 12.50
No. 1 busheling	16.50 to 17.00
Clean cast chem. borings	18.00 to 18.50
No. 1 machinery cast.	32.00 to 34.00
No. 2 machinery cast.	28.00 to 29.00
Heavy breakable cast.	25.00 to 26.00
Stove plate	25.00 to 26.00

### Detroit

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$21.00 to \$22.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 bundles	23.00 to 24.00
New busheling	22.00 to 23.00
Flashings	22.00 to 23.00
Machine shop turn.	14.00 to 14.50
Mixed bor. and turn.	14.00 to 14.50
Shoveling turnings	15.50 to 16.00
Cast iron borings	15.50 to 16.00
Low phos. plate	23.00 to 24.00
No. 1 cupola cast.	32.00 to 33.00
Heavy breakable cast.	26.00 to 27.00
Stove plate	27.00 to 28.00
Automotive cast.	34.00 to 35.00

### Cincinnati

Per gross ton, f.o.b. cars:	
No. 1 hvy. melting	\$26.00 to \$26.50
No. 2 hvy. melting	22.50 to 23.00
No. 1 bundles	26.00 to 26.50
No. 2 bundles	19.50 to 20.00
Machine shop turn.	13.50 to 14.00
Mixed bor. and turn.	16.50 to 17.00
Shoveling turnings	16.50 to 17.00
Cast iron borings	16.50 to 17.00
Low phos. 18 in. under	32.00 to 33.00
Rails, random lengths	33.00 to 34.00
Rails, 18 in. and under	41.00 to 42.00
No. 1 cupola cast	38.00 to 39.00
Hvy. breakable cast	31.00 to 32.00
Drop broken cast	41.00 to 42.00

### San Francisco

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Machine shop turn	9.00
Elec. fur. 1 ft and under	28.00
No. 1 RR. hvy. melting	20.00
Scrap rails, random lgth.	20.00
No. 1 cupola cast.	\$30.00 to 33.00

### Los Angeles

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Mach. shop turn.	12.00
Elec. fur. 1 ft and under	30.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	\$34.50 to 37.00

### Seattle

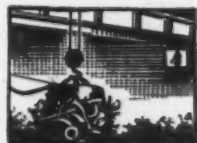
No. 1 hvy. melting	\$18.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Elec. fur. 1 ft. and under	\$25.00 to 28.00
RR. hvy. melting	19.00
No. 1 cupola cast	30.00
Heavy breakable cast.	20.00

### Hamilton, Ont.

No. 1 hvy. melting	\$24.00
No. 1 bundles	16.00
No. 2 bundles	16.00
Mechanical bundles	22.00
Mixed steel scrap	20.00
Mixed bor. and turn.	18.00
Rails, remelting	24.00
Rails, rerolling	27.00
Bushellings	18.50
Bush., new fact, prep'd	22.00
Bush., new fact, unprep'd	17.00
Short steel turnings	18.00
Cast scrap	\$40.00 to 43.00

*For the Purchase or Sale of  
Iron and Steel Scrap...*

**CONSULT OUR NEAREST OFFICE**



Since 1889 Luria Brothers and Company, Incorporated, have maintained their leadership in the industry by keeping abreast of the most modern methods . . . by seeking out the best markets in every part of the world . . . by strategically locating their offices to best serve the interests of their customers.

**LURIA BROTHERS & COMPANY, INCORPORATED**

**LINCOLN - LIBERTY BUILDING  
PHILADELPHIA 7, PENNSYLVANIA**

*Yards*

**LEBANON, PA. • READING, PA. • DETROIT (ECORSE), MICH.  
MODENA, PA. • PITTSBURGH, PA. • ERIE, PA.**

*Branch Offices*

**BIRMINGHAM, ALA.**  
418 Empire Bldg.

**CHICAGO, ILL.**  
100 W. Monroe St.

**HOUSTON, TEXAS**  
803-4-5 Milam Bldg.

**PITTSBURGH, PA.**  
Oliver Bldg.

**BOSTON, MASS.**  
Statler Bldg.

**CLEVELAND, O.**  
1022 Midland Bldg.

**LEBANON, PA.**  
Luria Bldg.

**PUEBLO, COLO.**  
334 Colorado Bldg.

**BUFFALO, N. Y.**  
Genesee Bldg.

**DETROIT, MICH.**  
2011 Book Bldg.

**NEW YORK, N. Y.**  
Woolworth Bldg.

**READING, PA.**  
Luria Bldg.

**ST. LOUIS, MO.,**  
2110 Railway Exchange Bldg.

**SAN FRANCISCO, CAL.**  
Pacific Gas & Electric Co., Bldg.

**LEADERS IN IRON AND STEEL SCRAP SINCE 1889**



## Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel:	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
(cents per pound)	1950	1950	1949	1950
Hot-rolled sheets	3.35	3.35	3.25	3.26
Cold-rolled sheets	4.10	4.10	4.00	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.265
Cold-rolled strip	4.18	4.18	4.038	4.063
Plates	3.50	3.50	3.40	3.42
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	33.00	33.00	33.00	33.25

## Tin and Terneplate:

(dollars per base box)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Tinplate (1.50 lb) cokes	\$7.50	\$7.50	\$7.75	\$7.75
Tinplate, electro (0.50 lb.)	6.60	6.60	6.70	6.70
Special coated mfg. ternes	6.50	6.50	6.65	6.65

## Bars and Shapes:

(cents per pound)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Merchant bars	3.45	3.45	3.35	3.37
Cold-finished bars	3.995	3.995	3.995	3.995
Alloy bars	3.95	3.95	3.75	3.75
Structural shapes	3.40	3.40	3.25	3.25
Stainless bars (No. 302)	28.50	28.50	28.50	28.50
Wrought iron bars	9.50	9.50	9.50	9.50

## Wire:

(cents per pound)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Bright wire	4.50	4.50	4.15	4.256

## Rails:

(dollars per 100 lb)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Heavy rails	\$3.40	\$3.40	\$3.20	\$3.20
Light rails	3.75	3.75	3.55	3.55

## Semifinished Steel:

(dollars per net ton)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Rerolling billets	\$54.00	\$54.00	\$52.00	\$52.00
Slabs, rerolling	54.00	54.00	52.00	52.00
Forging billets	63.00	63.00	61.00	61.00
Alloy blooms, billets, slabs	66.00	66.00	63.00	63.00

## Wire rod and Skelp:

(cents per pound)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Wire rods	3.85	3.85	3.40	3.619
Skelp	3.15	3.15	3.25	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron:	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
(per gross ton)	1950	1950	1949	1950
No. 2, foundry, Phila.	\$50.42	\$50.42	\$50.42	\$51.56
No. 2, Valley furnace	46.50	46.50	46.50	46.50
No. 2, Southern Cin'ti.	46.08	46.08	46.08	49.46
No. 2, Birmingham	39.38	39.38	39.38	43.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	46.50
Basic del'd Philadelphia	49.92	49.92	49.92	50.76
Basic, Valley furnace	46.00	46.00	46.00	46.00
Malleable, Chicago†	46.50	46.50	46.50	46.50
Malleable, Valley	46.50	46.50	46.50	46.50
Charcoal, Chicago	68.56	68.56	68.56	73.78
Ferromanganese†	173.40	173.40	173.40	161.40

†The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

†Average of U. S. prices quoted on Ferroalloy page.

## Scrap:

(per gross ton)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Heavy melt'g steel, P'gh.	\$29.75	\$29.75	\$30.75	\$40.75
Heavy melt'g steel, Phila.	23.00	23.50	24.50	42.50
Heavy melt'g steel, Ch'go	26.50	25.50	26.50	39.50
No. 1 hy. com. sh't, Det.	23.50	24.50	26.50	38.00
Low phos. Young'n.	31.75	31.75	32.75	47.00
No. 1, cast, Pittsburgh	37.50	37.50	39.50	68.00
No. 1, cast, Philadelphia	37.00	37.00	38.00	62.50
No. 1, cast Chicago	38.50	38.50	39.50	61.00

## Coke: Connellsville:

(per net ton at oven)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Furnace coke, prompt	\$14.00	\$14.00	\$14.00	\$17.00
Foundry coke, prompt	15.75	15.75	15.75	17.00

## Nonferrous Metals:

(cents per pound to large buyers)	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
Copper, electro, Conn.	18.50	18.50	18.50	23.50
Copper, Lake Conn.	18.625	18.625	18.625	23.625
Tin Straits, New York	77.00	77.50	79.00	\$1.03
Zinc, East St. Louis	9.75	9.875	9.75	17.50
Lead, St. Louis	11.80	11.80	11.80	21.30
Aluminum, virgin	17.00	17.00	17.00	17.00
Nickel electrolytic	42.97	42.97	42.97	42.90
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	32.00	32.00	32.00	35.00

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

## Composite Prices

Finished Steel Base Price	Jan. 10, 1950	Jan. 3, 1950	Dec. 13, 1949	Jan. 11, 1950
One week ago	3.837¢	3.837¢	3.837¢	3.837¢
One month ago	3.705¢	3.705¢	3.705¢	3.705¢
One year ago	3.720¢	3.720¢	3.720¢	3.720¢

High	Low
1949.... 3.837¢ Dec. 27	3.705¢ May 3
1948.... 3.721¢ July 27	3.193¢ Jan. 1
1947.... 3.193¢ July 29	2.848¢ Jan. 1
1946.... 2.848¢ Dec. 31	2.464¢ Jan. 1
1945.... 2.464¢ May 29	2.396¢ Jan. 1
1944.... 2.396¢	2.396¢
1943.... 2.396¢	2.396¢
1942.... 2.396¢	2.396¢
1941.... 2.396¢	2.396¢
1940.... 2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939.... 2.35367¢ Jan. 3	2.26689¢ May 16
1938.... 2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937.... 2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936.... 2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935.... 2.07642¢ Oct. 1	2.06492¢ Jan. 8
1934.... 2.15367¢ Apr. 24	1.95757¢ Jan. 2
1933.... 1.95578¢ Oct. 3	1.75836¢ May 2
1932.... 1.89196¢ July 5	1.83901¢ Mar. 1
1931.... 1.99626¢ Jan. 13	1.86586¢ Dec. 29
1929.... 2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Pig Iron	Scrap Steel
.... \$45.88 per gross ton....	.... \$26.42 per gross ton....
.... 45.88 per gross ton....	.... 26.25 per gross ton....
.... 45.88 per gross ton....	.... 27.25 per gross ton....
.... 46.91 per gross ton....	.... 40.92 per gross ton....

High	Low	High	Low
\$46.82 Jan. 4	\$45.88 Sept. 6	\$43.00 Jan. 1	\$19.33 June 25
46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
	23.61	19.17 Jan. 11	15.76 Oct. 24
	23.61		
	23.61		
\$23.61 Mar. 20	\$23.45 Jan. 2	\$22.00 Jan. 7	\$19.17 Apr. 10
23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
16.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.



Printed  
co.  
Jan. 11,  
1950  
\$51.56  
46.50  
49.46  
43.38  
46.50  
50.76  
46.00  
46.50  
46.50  
73.78  
161.40

the Chi-

\$40.75  
42.50  
39.50  
38.00  
47.00  
68.00  
62.50  
61.00

\$17.00  
17.00

23.50  
23.625  
\$1.03  
17.50  
21.30  
17.00  
42.90  
20.50  
35.00

ished  
The  
ts for  
ative.  
use it

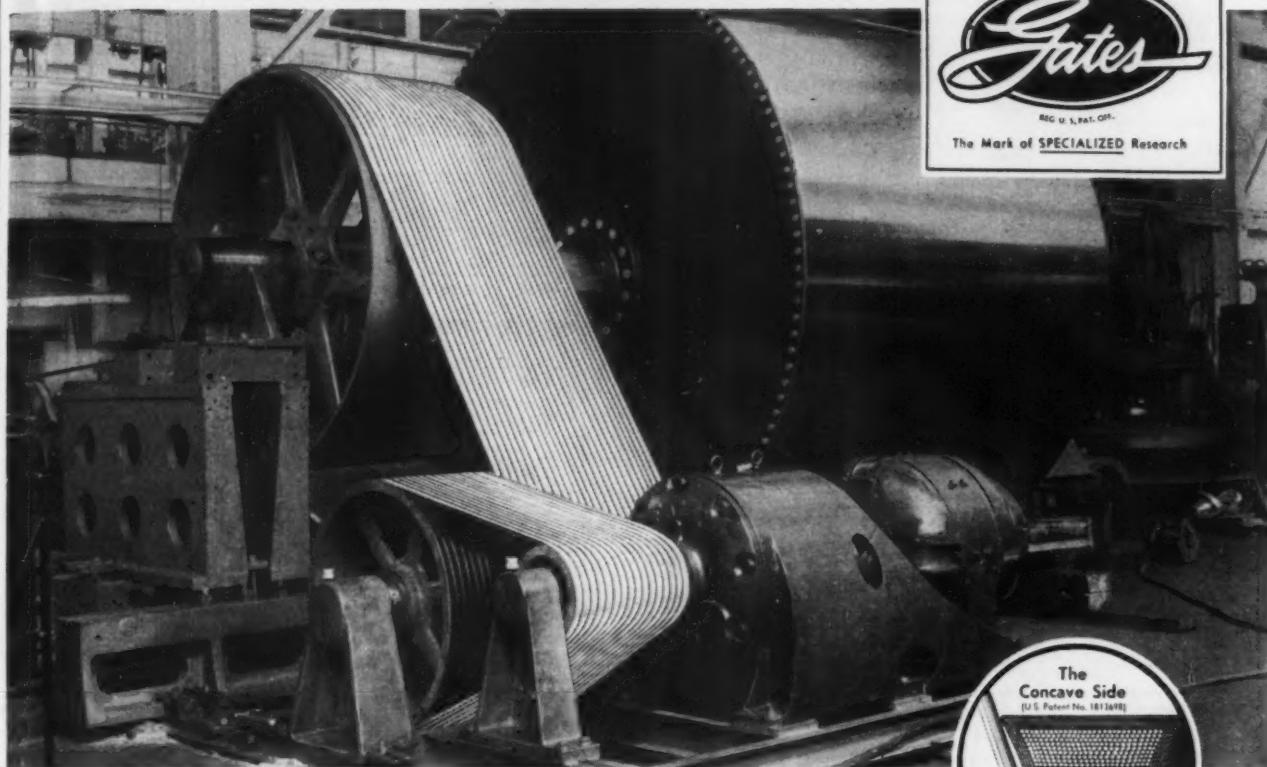
.....  
.....  
.....

une 28  
ar. 9  
ay 20  
an. 1  
ay 22  
ct. 24

17  
17  
pr. 10  
pr. 9  
ay 16  
une 7  
une 9  
une 8  
pr. 29  
pt. 25

n. 3  
ly 5  
ec. 29  
ec. 8  
etting  
umers  
Chl-

1950



This Gates Vulco Rope Drive has an unusual task. It revolves a 12-foot, 55-ton Drying Roll in a Roll Grinder at about one R.P.M. The double-reduction V-Belt Drive replaced gears because even at this slow speed the backlash of the gears resulted in chatter marks on the surface of the roll. The resilience of the Gates Vulco Ropes results in a smooth, mirror-like surface on the rolls.



## Two Distinct Savings in V-Belt Costs Are Yours with Gates Vulco Ropes

A simple test that takes less than two minutes will save you many dollars in V-Belt costs. Here it is—

Have someone bend a V-Belt exactly as it bends in going around its pulley. As it bends, grip its sides with your fingers. You will feel those sides *change shape*. In a straight-sided V-Belt, the sides become *convex* as the belt bends. And note how the sides *bulge out*. (Figures 1 and 1A)

Now try the same test with a V-Belt that is built with the concave side. You will feel a change in shape—but a *different result*! The sides do not become *convex*. Instead, they become perfectly straight. The bent belt now has a shape that *exactly fits its sheave groove*—as shown in Figures 2 and 2A.

Two distinct savings result. *First*—There is no side-bulge to cause uneven wear. The sides press *evenly* against the V pulley and therefore wear *uniformly*—resulting in *longer life*! *Second*—The *full width* of the sidewall grips the pulley—thus carrying heavier loads without slippage—and this *saves belts* and also *saves power*!

*When you buy V-Belts, be sure you get the V-Belt with the Concave Sides...the Gates Vulco Rope!*

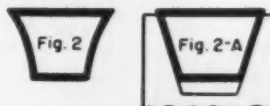
### What Happens When a V-Belt Bends

Straight-Sided V-Belt



How Straight-Sided V-Belt Bulges in Sheave-Groove.

Gates Vulco Rope with Concave Side.



No Side Bulge. Precise Fit in Sheave Groove.

C. S. 501

THE GATES RUBBER COMPANY  
DENVER, U.S.A.

The World's Largest Makers of V-Belts

**GATES VULCO ROPE DRIVES**

Engineering Offices  
and Jobber Stocks

IN ALL INDUSTRIAL CENTERS

at the U. S. and  
71 Foreign Countries

IRON AGE <b>STEEL PRICES</b>	Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page. Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.													
	Pittsburgh	Chicago	Gary	Cleveland	Canton Mass-	Middle- town	Youngs- town	Bethle- hem	Buffalo	Cosho- cton	Johns- town	Spar- rows Point	Granite City	Detroit
<b>INGOTS</b>														
Carbon forging, net ton	\$50.00 1													\$50.00 21
Alloy net ton	\$51.00 1.17													\$51.00 21
<b>BILLETS, BLOOMS, SLABS</b>														
Carbon, rerolling net ton	\$53.00 1	\$53.00 1	\$53.00 1				\$57.00 13		\$53.00 3	\$58.00 26	\$53.00 3			
Carbon forging billets, net ton	\$63.00 1	\$63.00 1.4	\$63.00 1.8	\$63.00 4			\$63.00 25		\$63.00 2.4	\$65.00 26	\$63.00 3			\$63.00 21
Alloy, net ton	\$66.00 1.17	\$66.00 1.4	\$66.00 1		\$66.00 4.63		\$66.00 13	\$66.00 3	\$66.00 2.4	\$66.00 26	\$66.00 3			\$66.00 21
<b>SHEET BARS</b>							\$57.00 13							
<b>PIPE SKELP</b>	3.15 1.5						3.15 1.4							
<b>WIRE RODS</b>	3.65 2.18	3.65 2.4.53	3.65 6	3.65 2			3.65 6				3.65 3	3.65 3		
<b>SHEETS</b>														
Hot-rolled (18 ga. & hvr.)	3.35 1.6.9.15	3.35 23	3.35 1.6.8	3.35 4.5			3.35 1.4.6.13		3.35 3	3.45 26		3.35 3		3.55 13
Cold-rolled	4.10 <sup>1-5</sup> 7.9.15.68		4.10 1.6.8	4.10 4.5		4.10 7	4.10 4.6		4.10 3			4.10 3	4.30 23	4.30 13
Galvanized (10 gage)	4.40 1.9.15		4.40 1.8		4.40 4		4.65 <sup>44</sup> 5.65 <sup>44</sup>					4.40 3		
Enameling (12 gage)	4.40 1		4.40 1.8	4.40 4		4.40 7	4.40 <sup>6</sup> 4.90 <sup>76</sup>						4.80 23	4.70 13
Long ternes (10 gage)	4.80 9.15		4.80 1			4.80 7	4.80 64							
Hi Str. low alloy, h.r.	5.05 1.6.9	5.05 1	5.05 1.6.8	5.05 4.5			5.05 1.4.6.13		5.05 3	5.05 26		5.05 3		5.25 13
Hi Str. low alloy, c.r.	6.20 1.6.9		6.20 1.6.8	6.20 4.5			6.20 4.6.13		6.20 3			6.20 3		6.40 13
Hi Str. low alloy, galv.	6.75 1			6.75 4	6.75 4							6.75 3		
<b>STRIP</b>														
Hot-rolled (over 6 in.)	3.25 6.7.9.23	3.25 23.65	3.25 1.6.8	3.25 5			3.25 1.4.6.13		3.25 3	3.36 26		3.25 3		3.45 <sup>17</sup> 3.45 <sup>13</sup>
Cold-rolled	4.15 6.7.9.63	4.30 6.65	4.30 8	4.15 3.5		4.15 7	4.15 4.6.13.46.48.49		4.15 3			4.15 3		4.40 <sup>68</sup> 4.35 <sup>13</sup> 4.47
Hi Str. low alloy, h.r.	4.95 9		4.95 1.6.8	4.95 5			4.95 1.4.6.13		4.95 3	4.95 26		4.95 3		5.15 13
Hi Str. low alloy, c.r.	6.20 9			6.05 3.5			6.05 4.6.13		6.05 3			6.05 3		6.40 13
<b>TINPLATE</b>														
Cokes, 1.50-lb. base box 1.25 lb. deduct 20¢	\$7.50 1.6.9.15		\$7.50 1.6.8				\$7.50 4					\$7.60 3	\$7.70 23	
Electrolytic 0.25, 0.50, 0.75 lb box	Deduct \$1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price													
<b>BLACKPLATE, 29 gage</b>	5.30 1.6.15		5.30 1.6				5.30 4					5.40 3	5.50 23	
<b>HOLLOWWARE ENAMELING</b>														
<b>BARS</b>														
Carbon steel	3.45 1.6.9.17	3.45 1.4.23	3.45 1.6.8	3.45 4	3.45 4		3.45 1.4.6		3.45 2.4		3.45 3			3.65 13
Reinforcing	3.45 1.6	3.45 4	3.45 1.6.8	3.45 4	3.45 4		3.45 1.4.6		3.45 2.4		3.45 3	3.45 3		
Cold-finished	4.10 <sup>9</sup> 4.15 <sup>2-4</sup> 17.62.69.71	4.15 <sup>9</sup> 23.69.70	4.15 4.73.74	4.15 2.61	4.15 4.22 4.15 <sup>22</sup>		4.15 6.40.67		4.15 70					4.30 13
Alloy, hot-rolled	3.95 1.17	3.95 1.4.23	3.95 1.6.8		3.95 4		3.95 1.6.25	3.95 3	3.95 2.4		3.95 3			4.25 13
Alloy-cold-drawn	4.65 2.17.62.69.71	4.65 2.23.69.70	4.90 4.73.74	4.65 2.61	4.90 4.42.93		4.65 5.25.67	4.90 3	4.65 <sup>70</sup> 4.90 <sup>3</sup>					
Hi Str. low alloy, h.r.	5.20 1.6		5.20 1.6.8	5.20 4			5.20 1.6	5.20 3	5.20 3		5.20 3			5.40 13
<b>PLATE</b>														
Carbon Steel	3.50 1.6	3.50 1	3.50 1.6.8	3.50 4			3.50 13		3.50 3	3.60 26	3.50 3	3.50 3		3.75 13
Floor plates	4.55 1	4.55 1	4.55 3	4.55 5					4.55 26					
Alloy	4.40 1	4.40 1	4.40 1				4.40 13			4.40 26	4.40 3	4.40 3		
Hi St. low alloy	5.35 1.6	5.35 1	5.35 1.6	5.35 4.5			5.35 6			5.35 26	5.35 3	5.35 3		5.60 13
<b>SHAPES, Structural</b>														
Hi Str. low alloy	5.15 1.6-9	5.15 1.23	5.15 1.6.8				5.15 6	5.15 3	5.15 3		5.15 3			
<b>MANUFACTURERS' WIRE</b>														
Bright	4.50 2.5.13	4.50 <sup>13</sup> 4.33.34		4.50 2.77			4.50 6	Kokomo=4.60 <sup>30</sup>			4.50 3	4.60 3	Duluth=4.60 <sup>9</sup> Pueblo=	4.4
<b>PILING, Steel sheet</b>	4.20 <sup>1</sup> 4.05 <sup>9</sup>	4.20 1							4.20 3					



Smaller numbers indicate producing companies. See key at right.  
Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

## STEEL PRICES

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana	
	\$59.00 52			INGOTS Carbon forging, net ton
				Alloy, net ton
		\$53.00 11	F=\$72.00 <sup>19</sup>	BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	\$59.00 52	\$53.00 11	F=\$82.00 <sup>19</sup>	Carbon forging billets, net ton
			F=\$82.00 <sup>19</sup>	Alloy net ton
			Portsmouth=\$55.00 <sup>20</sup>	SHEET BARS
				PIPE SKELP
	3.95 52	3.85 11	SF, LA=4.65 <sup>24</sup> LA=4.20 <sup>25</sup>	WIRE RODS
		3.35 4.11	SF, LA=4.05 <sup>24</sup> F=4.25 <sup>19</sup>	SHEETS Hot-rolled (18 ga. & hvr.)
		4.10 11	SF=5.05 <sup>24</sup> F=5.00 <sup>19</sup>	Cold-rolled
		4.40 4.11	SF, LA=5.15 <sup>24</sup>	Galvanized (10 gage)
			Ashland=4.40 <sup>7</sup> Kokomo=4.50 <sup>29</sup>	Enameling (12 gage)
		5.05 11	F=6.74 <sup>19</sup>	Long ternes (10 gage)
			F=7.10 <sup>19</sup>	Hi Str. low alloy, h.r.
				Hi Str. low alloy, c.r.
				Hi Str. low alloy, galv.
3.85 53	3.65 53	3.25 11	SF, LA=4.00 <sup>23</sup> F=4.40 <sup>19</sup> S=4.25 <sup>23</sup>	STRIP Hot-rolled
			F=5.40 <sup>19</sup> LA=5.40 <sup>27</sup>	Cold-rolled
		4.95 11	F=6.64 <sup>19</sup>	Hi Str. low alloy, h.r.
			F=6.95 <sup>19</sup>	Hi Str. low alloy, c.r.
		\$7.60 11	SF=\$8.25 <sup>24</sup>	TINPLATE Coke, 1.50-lb. base box 1.25 lb. deduct 20¢
Deduct \$1.16, 90¢ and 65¢ respectively from 1.50-lb coke base box price				Electrolytic 0.25, 0.50, 0.75 lb box
				BLACKPLATE, 28 gage Hollowware enameling
3.95 53	3.75 52	3.45 4.11	SF, LA=4.15 <sup>24</sup> LA=4.15 <sup>23</sup>	BARS Carbon steel
3.95 53	3.75 52	3.45 4.11	SF, S=4.20 <sup>23</sup> F=4.10 <sup>19</sup>	Reinforcing†
			Putnam, Newark=4.55 <sup>29</sup> Cumberland=72	Cold-finished
4.35 53			LA=5.00 <sup>23</sup> F=4.95 <sup>19</sup>	Alloy, hot-rolled
			Newark, Worcester=4.95 Hartford=5.25 <sup>4</sup>	Alloy, cold-drawn
		5.20 4.11	F=6.25 <sup>19</sup>	Hi Str. low alloy, h.r.
	3.80 52	3.50 4.11	F=4.10 <sup>19</sup> S=4.40 <sup>23</sup> Geneva=3.50 <sup>16</sup>	PLATE Carbon steel
			Harrisburg=4.55 <sup>28</sup>	Floor plates
			F=5.95 <sup>19</sup>	Alloy
		5.35 11	Geneva=5.35 <sup>16</sup>	Hi Str. low alloy
3.85 53	3.65 53	3.40 11	SF=3.95 <sup>23</sup> LA=4.00, 24, 29	SHAPES, Structural
		5.15 11	F=4.00 <sup>19</sup> S=4.05 <sup>23</sup>	Hi Str. low alloy
4.75 53	4.55 53	4.50 4.11	SF, LA=5.45 <sup>24</sup> LA=5.10 <sup>23</sup>	MANUFACTURERS' WIRE Bright

Notes: †Special coated mfg ternes, deduct \$1.00 from 1.50-lb coke base box price.  
Can-making quality blackplate, 55 to 128-lb, deduct \$1.90 from 1.50-lb coke base box.  
†Straight lengths only from producer to fabricator.

## KEY TO STEEL PRODUCERS

With Principal Offices

- Carnegie-Illinois Steel Corp., Pittsburgh
- American Steel & Wire Co., Cleveland
- Bethlehem Steel Co., Bethlehem
- Republic Steel Corp., Cleveland
- Jones & Laughlin Steel Corp., Pittsburgh
- Youngstown Sheet & Tube Co., Youngstown
- Armco Steel Corp., Middletown, Ohio
- Inland Steel Co., Chicago
- Weirton Steel Co., Weirton, W. Va.
- National Tube Co., Pittsburgh
- Tennessee Coal, Iron & R. R. Co., Birmingham
- Great Lakes Steel Corp., Detroit
- Sharon Steel Corp., Sharon, Pa.
- Colorado Fuel & Iron Corp., Denver
- Wheeling Steel Corp., Wheeling, W. Va.
- Geneva Steel Co., Salt Lake City
- Crucible Steel Co. of America, New York
- Pittsburgh Steel Co., Pittsburgh
- Kaiser Co., Inc., Oakland, Calif.
- Portsmouth Steel Corp., Portsmouth, Ohio
- Lukens Steel Co., Coatsville, Pa.
- Granite City Steel Co., Granite City, Ill.
- Wisconsin Steel Co., South Chicago, Ill.
- Columbia Steel Co., San Francisco
- Copperweld Steel Co., Glassport, Pa.
- Alan Wood Steel Co., Conshohocken, Pa.
- Calif. Cold Rolled Steel Corp., Los Angeles
- Allegheny Ludlum Steel Corp., Pittsburgh
- Worth Steel Co., Claymont, Del.
- Continental Steel Corp., Kokomo, Ind.
- Rotary Electric Steel Co., Detroit
- Laclede Steel Co., St. Louis
- Northwestern Steel & Wire Co., Sterling, Ill.
- Keystone Steel & Wire Co., Peoria, Ill.
- Central Iron & Steel Co., Harrisburg, Pa.
- Carpenter Steel Co., Reading, Pa.
- Eastern Stainless Steel Corp., Baltimore
- Washington Steel Corp., Washington, Pa.
- Jessop Steel Co., Washington, Pa.
- Blair Strip Steel Co., New Castle, Pa.
- Superior Steel Corp., Carnegie, Pa.
- Timken Steel & Tube Div., Canton, Ohio
- Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- Reeves Steel & Mfg. Co., Dover, Ohio
- John A. Roebling's Sons Co., Trenton, N. J.
- Simonds Saw & Steel Co., Fitchburg, Mass.
- McLouth Steel Corp., Detroit
- Cold Metal Products Co., Youngstown
- Thomas Steel Co., Warren, Ohio
- Wilson Steel & Wire Co., Chicago
- Sweet's Steel Co., Williamsport, Pa.
- Superior Drawn Steel Co., Monaca, Pa.
- Tremont Nail Co., Wareham, Mass.
- Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
- Ingersoll Steel Div., Chicago
- Phoenix Iron & Steel Co., Phoenixville, Pa.
- Fitzsimons Steel Co., Youngstown
- Stanley Works, New Britain, Conn.
- Universal-Cyclops Steel Corp., Bridgeville, Pa.
- American Cladmetals Co., Carnegie, Pa.
- Cuyahoga Steel & Wire Co., Cleveland
- Bethlehem Pacific Coast Steel Corp., San Francisco
- Follansbee Steel Corp., Pittsburgh
- Niles Rolling Mill Co., Niles, Ohio
- Atlantic Steel Co., Atlanta
- Acme Steel Co., Chicago
- Joslyn Mfg. & Supply Co., Chicago
- Detroit Steel Corp., Detroit
- Wyckoff Steel Co., Pittsburgh
- Bliss & Laughlin, Inc., Harvey, Ill.
- Columbia Steel & Shaffing Co., Pittsburgh
- Cumberland Steel Co., Cumberland, Md.
- La Salle Steel Co., Chicago
- Monarch Steel Co., Inc., Indianapolis
- Empire Steel Co., Mansfield, Ohio
- Mahoning Valley Steel Co., Niles, Ohio
- Oliver Iron & Steel Co., Pittsburgh
- Pittsburgh Screw & Bolt Co., Pittsburgh
- Standard Forgings Corp., Chicago
- Driver Harris Co., Harrison, N. J.
- Detroit Tube & Steel Div., Detroit
- Reliance Div., Eaton Mfg. Co., Massillon, Ohio
- Sheffield Steel Corp., Kansas City



## MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column Pittsburg, Calif.
Standard & coated nails*	108
Woven wire fence†	116
Fence posts, carloads††	112
Single loop bale ties	113
Galvanized barbed wire**	126
Twisted barbed wire	126

\* Pgh., Chi., Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 columns higher. † 15 1/2 gage and heavier. \*\* On 80 rod spools, in carloads. †† Duluth, Joliet and Johnstown.

	Base per 100 lb	Pittsburg, Calif.
Annealed fence wire†	\$5.15	\$6.10
Annealed, galv. fencing†	5.60	6.55
Cut nails, carloads††	6.75	...

† Add 30¢ at Worcester; 40¢ at Chicago; 10¢ at Sparrows Pt.  
†† Less 20¢ to jobbers.

**PRODUCING POINTS — Standard, Coated or galvanized nails, woven wire fence, bale ties, and barbed wire:** Alabama City, Ala., 4; Atlanta, 65; Alliquippa, Pa. (except bale ties), 5; Bartonsville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30; Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburg, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only), 24; Worcester (nails only), 2; Houston (except bale ties), 83; Kansas City (except bale ties), 83.

**Fence posts:** Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

**Cut nails:** Wheeling, W. Va., 15; Conshohocken, Pa., 26; Wareham, Mass., 53.

## CLAD STEEL

Base prices, cents per pound, f.o.b. mill

	Plate	Sheet
<b>Stainless-carbon</b>		
No. 304, 20 pct.		
Coatesville, Pa. (21)...	*26.50	
Washgtn, Pa. (39)...	*26.50	
Claymont, Del. (29)...	*26.50	
Conshohocken, Pa. (26)		*22.50
New Castle, Ind. (55)...	*26.50	*24.00
<b>Nickel-carbon</b>		
10 pct, Coatesville, (26)	27.50	
<b>Inconel-carbon</b>		
10 pct, Coatesville, (21)	36.00	
<b>Monel-carbon</b>		
10 pct, Coatesville, (21)	29.00	
No. 302 Stainless-copper-stainless, Carnegie, Pa. (60)		\$1.40
Aluminized steel sheets, hot dip, Butler, Pa., (7)....		7.75

\* Includes annealing and pickling, or sandblasting.

## ELECTRICAL SHEETS

22 gage, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	†6.45
Electrical	†6.95
Motor	*7.95
Dynamo	8.75
Transformer 72	9.30
Transformer 65	9.85
Transformer 58	10.65
Transformer 52	11.35

**PRODUCING POINTS—Beech Bottom, W. Va., 18; Brackenridge, Pa., 28; Folsom, W. Va., 63; Granite City, Ill., 22\*, add 20¢; Indiana Harbor, Ind., 8†, deduct 25¢; Mansfield, Ohio, 75; Niles, Ohio, 64, 76; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.**

Numbers after producing points correspond to steel producers. See key on Steel Price page.

## BOLTS, NUTS, RIVETS, SET SCREWS

## Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)  
Base discount

## Machine and Carriage Bolts

	Pct Off List	Less Case C.
1/2 in. & smaller x 6 in. & shorter	27	38
9/16 & 5/8 in. x 6 in. & shorter	29	40
3/4 in. & larger x 6 in. & shorter	26	37
All diam., longer than 6 in.	22	34
Lag, all diam over 6 in. & longer	28	39
Lag, all diam x 6 in. & shorter	30	41
Flow bolts	40	—

## Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

1/2 in. and smaller	25	37
9/16 and 5/8 in.	23	35
3/4 to 1 1/2 in. inclusive	23	35
1 1/2 in. and larger	16	29

## Semifinished Hexagon Nuts

(Less case lots)

	Pct Off List	Reg	Hvy	Lt
1/2 in. and smaller	35	41		
9/16 & 5/8 in.	36	30	36	
3/4 to 1 1/2 in.	31	27	33	
1 1/2 in. and larger	21	17		

In full case lots, 15 pct additional discount.

## Stove Bolts

	Pct Off List
Packaged, steel, plain finish... 63 1/2 and 10	
Packaged, plated finish... 50 and 10	
Bulk, plain finish**	72*

\*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

\*\*Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

## Large Rivets

(1/2 in. and larger)

Base per 100 lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa. \$7.25

## Small Rivets

(7/16 in. and smaller)

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham

Cap and Set Screws

(In bulk)

Pct Off List

Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6

in., SAE 1020, bright

1/4 in. through 5/8 in. x 6 in. and shorter (SAE 1035) heat treated

Milled studs

Flat head cap screws, listed sizes

Fillister head cap, listed sizes

## C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

## LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

	Per gross ton
Old range, bessemer	\$7.60
Old range, nonbessemer	7.45
Mesabi, bessemer	7.35
Mesabi, nonbessemer	7.20
High phosphorus	7.20

After Dec. 31, 1948, increases or decreases in Upper Lake freight, dock and handling charges and taxes thereon to be for the buyers' account.

## RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	\$3.40
Joint bars, per 100 lb	4.40
Light rails, per 100 lb	3.75

	Base Price cents per lb
Track spikes†	5.35
Axles	5.25
Screw spikes	8.60
Tie plates	4.20
Tie plates, Pittsburgh, Torr., Calif.*	4.35
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	9.10

\* Seattle, add 30¢.

† Kansas City, 5.60¢.

**PRODUCING POINTS—Standard rails:** Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, Pa., 3.

**Light rails:** All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, Pa. 3; Minnequa, Colo., 14.

**Joint bars:** Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

**Track spikes:** Fairfield, Ala., 11; Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, Ohio, 6; Youngstown, 4.

**Track bolts:** Fairfield, Ala., 11; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 7, 78.

**Axles:** Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 79; Johnstown, Pa., 3; McKees Rocks, Pa., 1.

**Tie plates:** Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburgh, Calif., 24; Pittsburgh, 4; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

## TOOL STEEL

F.o.b. mill

	W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	—	\$1.00
18	4	1	—	—	5	\$1.565
18	4	2	—	—	—	\$1.13
1.5	4	1.5	8	—	—	71.5¢
6	4	2	6	—	—	76.5¢
High-carbon-chromium						57.5¢
Oil hardened manganese						32¢
Special carbon						29.5¢
Extra carbon						24.5¢
Regular carbon						21¢

Warehouse prices on and east of Mississippi are 2 1/2¢ per lb higher. West of Mississippi, 4 1/2¢ higher.

## COKE

	Furnace, beehive (f.o.b. oven)	Net Ton
Connellsville, Pa. ....	\$13.50 to \$14.50	
	Foundry, beehive (f.o.b. oven)	Net Ton
Connellsville, Pa. ....	\$15.50 to \$16.00	
	Foundry, oven coke	
Buffalo, del'd	\$20.90	
Chicago, f.o.b.	20.40	
Detroit, f.o.b.	19.40	
New England, del'd	22.70	
Seaboard, N. J., f.o.b.	22.00	
Philadelphia, f.o.b.	20.45	
Swedeland, Pa., f.o.b.	20.40	
Plainsville, Ohio, f.o.b.	20.90	
Erie, del'd	\$20.25 to 21.40	
Cleveland, del'd	22.62	
Cincinnati, del'd	21.71	
St. Paul, f.o.b.	22.50	
St. Louis, del'd	21.60	
Birmingham, del'd	18.75	

## FLUORSPAR

Washed gravel fluor spar, f.o.b. cars, Rosiclare, Ill. Base price, per ton net: Effective CaF<sub>2</sub> content: 70% or more \$37.00 60% or less 34.00

## STAINLESS STEELS

Base prices, in cents per pound,  
f.o.b. producing point

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling.....	12.75	13.00	15.00	14.50	22.75	18.25	20.00	11.25	13.75	11.50
Slabs, billets, rerolling.....	17.00	18.25	20.25	19.25	30.25	24.50	26.75	15.90	18.90	15.25
Forg. discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	38.50	41.00	24.50	25.00	25.00
Billets, forging.....	24.25	24.25	26.25	25.50	39.00	29.00	32.75	19.50	20.00	20.00
Bars, wire, structurals.....	28.50	28.50	31.00	30.00	46.00	34.00	38.50	23.00	23.50	23.50
Plates.....	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50	26.50
Sheets.....	37.50	37.50	39.50	39.50	53.00	45.50	50.00	33.00	33.50	35.50
Strip, hot-rolled.....	24.25	25.75	30.00	27.75	46.00	34.50	38.75	21.25	28.00	21.75
Strip, cold-rolled.....	30.50	33.00	36.50	35.00	55.00	44.50	48.50	27.00	33.50	27.00

Numbers correspond to producers. See Key on Steel Price Page.

STAINLESS STEEL PRODUCING POINTS—Sheets: Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38, 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Lockport, N. Y., 46.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 49; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1, 67; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Chicago, 67; Trenton, N. J., 46; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks, rings: Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28. Forging billets: Midland, Pa., 17; Baltimore, 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1.

## PIPE AND TUBING

Base discounts, f.o.b. mills  
Base price, about \$200.00 per net ton

## Standard, T &amp; C

Steel, butt weld*	Black	Galv
1/2-in. ....	40 1/2 to 38 1/2	24 to 22
3/4-in. ....	43 1/2 to 41 1/2	25 to 26
1-in. ....	46 to 44	31 to 29
1 1/4-in. ....	46 1/2 to 44 1/2	31 1/2 to 29 1/2
1 1/2-in. ....	47 to 45	32 to 30
2-in. ....	47 1/2 to 45 1/2	32 1/2 to 30 1/2
2 1/2 to 3-in. ....	48 to 46	33 to 31

Steel, lap weld		
2-in. ....	37	23 1/2 to 21 1/2
2 1/2 to 3-in. ....	41	25 1/2 to 24 1/2
3 1/2 to 6-in. ....	44	28 1/2 to 24 1/2

Steel, seamless		
2-in. ....	36	20 1/2
2 1/2 to 3-in. ....	39	23 1/2
3 1/2 to 6-in. ....	41	25 1/2

Wrought iron, butt weld		
1/2-in. ....	+26 1/2	+53
3/4-in. ....	+16 1/2	+42
1 & 1 1/4-in. ....	+10 1/2	+33
1 1/2-in. ....	+4 1/2	+29 1/2
2-in. ....	+4	+29

Wrought iron, lap weld		
2-in. ....	+13 1/2	+37
2 1/2 to 3 1/2-in. ....	+11	+32 1/2
4-in. ....	+6	+26 1/2
4 1/2 to 8-in. ....	+8	+28
9 to 12-in. ....	+18	+37 1/2

## Extra Strong, Plain Ends

Steel, butt weld		
1/2-in. ....	39 1/2 to 37 1/2	24 1/2 to 22 1/2
3/4-in. ....	43 1/2 to 41 1/2	28 1/2 to 26 1/2
1-in. ....	45 1/2 to 43 1/2	31 1/2 to 29 1/2
1 1/4-in. ....	46 to 44	32 to 30
1 1/2-in. ....	46 1/2 to 44 1/2	32 1/2 to 30 1/2
2-in. ....	47 to 45	33 to 32
2 1/2 to 3-in. ....	47 1/2 to 45 1/2	33 1/2 to 31 1/2

Steel, lap weld		
2-in. ....	37 to 36	22 1/2 to 21 1/2
2 1/2 to 3-in. ....	42 to 40	25 1/2 to 25 1/2
3 1/2 to 6-in. ....	45 1/2 to 41 1/2	31 to 29

Steel, seamless		
2-in. ....	35	20 1/2
2 1/2 to 3-in. ....	39	24 1/2
3 1/2 to 6-in. ....	42 1/2	28

Wrought iron, butt weld		
1/2-in. ....	+22	+47
3/4-in. ....	+15 1/2	+40
1 to 2-in. ....	+5 1/2	+29

Wrought iron, lap weld		
2-in. ....	+10 1/2	+33 1/2
2 1/2 to 4-in. ....	+1	+22
4 1/2 to 6-in. ....	+5	+26 1/2
7 & 8-in. ....	list	+21 1/2
9 to 12-in. ....	+11 1/2	+29 1/2

For threads only, butt weld, lap weld and seamless pipe, one point higher discount (lower price) applies. For plain ends, butt weld, lap weld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lap weld and seamless 3 1/2-in. and larger four points higher discount (lower price) applies. On butt weld and lap weld steel pipe, jobbers are granted a discount of 5 pct. \*Fontana, Calif., deduct 11 points from figures in left columns.

## BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut lengths 10 to 24 ft inclusive.

OD in.	gauge	Seamless H.R.	Electric H.R.	Weld C.D.
2	13	\$20.61	\$24.24	\$19.99
2 1/2	12	27.71	32.58	26.88
3	12	30.82	36.27	29.90
3 1/2	11	38.52	45.38	37.36
4	10	47.82	56.25	46.39

## CAST IRON WATER PIPE

Per net ton  
6 to 20-in., del'd Chicago ..... \$95.70  
6 to 24-in., del'd N. Y. .... \$92.50 to 97.40  
6 to 24-in., Birmingham ..... 82.50  
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less ..... 109.30  
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.

## REFRACTORIES

(F.o.b. works)

## Fire Clay Brick

Carloads, Per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5).....	\$36.00
No. 1 Ohio .....	80.00
Sec. quality, Pa., Md., Ky., Mo., Ill. ....	80.00
No. 2 Ohio .....	72.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50).....	14.00

## Silica Brick

Mt. Union, Pa., Ensley, Ala. ....	\$36.00
Childs, Pa. ....	90.00
Hays, Pa. ....	91.00
Chicago District .....	95.00
Western, Utah and Calif. ....	101.00
Super Duty, Hays, Pa., Athens, Tex., Chicago .....	106.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) .....	15.00
Silica cement, net ton, bulk, Hays, Pa. ....	17.00
Silica cement, net ton, bulk, Ensley, Ala. ....	16.00
Silica cement, net ton, bulk, Chicago District .....	16.00
Silica cement, net ton, bulk, Utah and Calif. ....	22.50

## Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester .....	\$69.00
--	---------

## Magnesite Brick

Standard, Baltimore .....	\$91.00
Chemically bonded, Baltimore .....	80.00

## Grain Magnesite

Std. 1/2-in. grains

Domestic, f.o.b. Baltimore, in bulk, fines removed.....	\$56.00 to \$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines .....	30.50 to 31.00
In sacks with fines .....	35.00 to 35.50

## Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk, Midwest, add 10¢; Missouri Valley, add 20¢.....	\$12.25
---	---------

## METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.	
Swedish sponge iron c.i.f. New York, ocean bags.....	7.4¢ to 9.0¢

## Domestic sponge iron, 98+%

Fe, carload lots .....	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe .....	\$1.5¢ to 39.5¢
Electrolytic iron unannealed, minus 325 mesh, 99+% Fe .....	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe .....	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8+% Fe .....	90.0¢ to \$1.75
Aluminum .....	29.00¢
Antimony .....	45.78¢
Brass, 10 ton lots .....	23.25¢ to 26.75¢
Copper, electrolytic .....	28.625¢
Copper, reduced .....	28.50¢
Cadmium .....	\$2.40
Chromium, electrolytic, 99% min. ....	\$3.50
Lead .....	18.50¢
Manganese .....	55.00¢
Molybdenum, 99% .....	\$2.65
Nickel, unannealed .....	61.00¢
Nickel, spherical, minus 30 mesh, unannealed .....	68.00¢
Silicon .....	34.00¢
Solder powder .....	8.5¢ plus metal cost
Stainless steel, 302 .....	75.00¢
Tin .....	90.00¢
Tungsten, 99% .....	\$2.90
Zinc, 10 ton lots .....	15.50¢ to 18.25¢

## ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb
GRAPHITE		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2 1/2	24, 30	21.00¢
2	24, 30	23.00¢
CARBON		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢



WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb.  
(Metropolitan area delivery, add 15c to base price except Cincinnati and New Orleans (\*), add 10c; New York, Chicago and Boston, add 20c).

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Baltimore		6.44 <sup>1</sup>	6.46 <sup>2</sup>	5.59 <sup>11</sup>		5.64 <sup>11</sup>	5.40	5.49 <sup>11</sup>					
Birmingham													
Boston	5.73	6.48-6.85	7.24	5.78	6.95	5.88	5.55	5.60	6.02-6.30	9.70	10.00	11.15	11.45
Buffalo	5.05	5.80	6.79	5.41	7.27	5.45	5.15	5.05	5.65	9.60	9.90	11.05	11.35
Chicago	5.05	5.80	6.70	5.10	5.45-5.16	5.20	5.05	5.00	5.65	9.25	9.55	10.70	11.00
Cincinnati*	5.32	5.80-5.84	6.29	5.49		5.59	5.44	5.39	6.10	9.60	9.90	11.05	11.35
Cleveland	5.05	5.80	6.95	5.24	6.35	5.32	5.17	5.12	5.75	9.38	9.68	10.81	11.11
Detroit	5.33	6.08	7.09	5.49	6.27-6.58	5.59	5.44	5.39	6.03	9.56	9.86	11.01	11.31
Houston													
Indianapolis					7.36								
Kansas City					6.95								
Los Angeles					7.35								
Memphis					6.80								
Milwaukee	5.19	5.94	6.84	5.24	6.32	5.34		5.14	5.89	9.39	9.69	10.84	11.14
New Orleans*													
New York	5.55-5.65	6.54-6.64	6.90-7.00	5.84	6.76	5.70	5.45	5.65	6.44	9.60	9.90	11.05	11.35
Norfolk													
Omaha													
Philadelphia	5.30	6.20	6.70	5.65	6.29	5.45	5.25	5.50	6.31	9.35	9.65	10.80	11.10
Pittsburgh	5.05	5.80	6.70	5.20	6.00	5.20	5.05	5.00	5.75	9.25	9.55	10.70	11.00
Portland													
Salt Lake City													
San Francisco	6.25 <sup>11</sup>	7.60 <sup>2</sup>	7.50 <sup>2</sup>	6.75 <sup>11</sup>	8.25	6.15 <sup>11</sup>	6.00	6.15 <sup>11</sup>	7.80				
Seattle													
St. Louis	5.38	6.13	7.03	5.43	6.68-7.54	5.53	5.38	5.35	6.08	9.58	9.88	11.03	11.33
St. Paul					6.82								

BASE QUANTITIES: (Standard unless otherwise keyed on prices).

Hot-rolled sheets and strip, hot rolled bars and bar shapes, structural shapes, plate, galvanized sheets and cold-rolled sheets: 2000 to 9999 lb. Cold-finished bars: 1000 lb or over. Alloy bars: 1000 to 1999 lb.

All HR products may be combined to determine quantity bracket. All galvanized sheets may be combined to determine quantity bracket. CR sheets may not be combined with each other or with galv. sheets to determine quantity bracket.

Exceptions:

(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 500 to 1499 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 2999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb; (18) 1000 to 1499 lb; (19) 1500 to 3499 lb; (20) 6000 lb and over; (21) 2000 to 3999 lb; (22) 2000 to 9999 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	48.50	49.90	49.50		Boston	Everett	\$0.50 Arb.		50.50	51.00		
Birmingham	38.88	39.38				Boston	Steelton	6.90					60.90
Buffalo	46.00	46.50	47.00			Brooklyn	Bethlehem	4.29		52.79	53.29	53.79	
Chicago	46.00	46.50	46.50	47.00		Cincinnati	Birmingham	6.70	45.58	46.08			
Cleveland	46.00	46.50	46.50	47.00	51.00	Jersey City	Bethlehem	2.63		51.13	51.63	52.13	
Duluth	46.00	46.50	46.50	47.00		Los Angeles	Geneva-Ironton	7.70	53.70	54.20			
Erie	46.00	46.50	46.50	47.00		Mansfield	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Everett		50.50	51.00			Philadelphia	Bethlehem	2.39	50.39	50.89	51.39	51.89	
Granite City	47.90	48.40	48.90			Philadelphia	Swedeland	1.44	49.44	49.94	50.44	50.94	
Ironton, Utah	46.00	46.50				Philadelphia	Steelton	3.09					57.09
Pittsburgh	46.00	46.50	46.50	47.00		Rochester	Buffalo	2.63	48.63	49.13	49.63		
Geneva, Utah	46.00	46.50				San Francisco	Geneva-Ironton	7.70	53.70	54.20			
Sharpsville	46.00	46.50	46.50	47.00		Seattle	Geneva-Ironton	7.70	53.70	54.20			
Steelton	46.00	46.50	49.00	49.50	54.00	St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65		
Swedeland, Ohio	46.00					Syracuse	Buffalo	3.58	49.58	50.08	50.58		
Toledo	46.00	46.50	46.50	47.00									
Troy, N. Y.	48.00	48.50	49.00	47.00	54.00								
Youngstown	46.00	46.50	46.50	47.00									

Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 58c per ton for phosphorus content of 0.70 pct and over manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese

content in excess of 1.00 pct. \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 0.01 to 0.50 pct. C/L per g.t., f.o.b. Jackson, Ohio—\$59.50; f.o.b. Buffalo, \$60.75. Add \$1.00 per ton for each additional 0.50 pct Si up to 17 pct.

Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for 0.75 pct or more P. Bessemer ferro-silicon prices are \$1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus \$60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, \$65.56. High phosphorus charcoal pig iron is not being produced.



## FERROALLOYS

## Ferromanganese

78-82% Mn, maximum contact base price, gross ton, lump size.	
F.o.b. Birmingham	\$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	\$172
F.o.b. Johnstown, Pa.	\$174
F.o.b. Sheridan, Pa.	\$172
F.o.b. Etna, Clairton, Pa.	\$175
\$2.00 for each 1% above 82% Mn, penalty, \$2.15 for each 1% below 78%.	
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.	
Carload, bulk	10.45
Ton lots	12.05
Less ton lots	12.95

## Spiegeleisen

Contract prices gross ton, lump, f.o.b.	
16-19% Mn 19-21% Mn	
3% max. Si 3% max. Si	
Palmerton, Pa.	\$64.00 \$65.00
Pgh. or Chicago	65.00 66.00

## Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.	
96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.	
Carload, packed	\$5.5
Ton lots	\$7.0

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.	
Carloads	28
Ton lots	30
Less ton lots	32

## Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.	
Carloads Ton Less	
0.07% max. C, 0.06% P, 90% Mn	25.25 27.10 28.30
0.10% max. C	24.75 26.60 27.80
0.15% max. C	24.25 26.10 27.30
0.20% max. C	23.75 25.60 26.80
0.50% max. C	23.25 25.10 26.30
0.75% max. C	
7.00% max. Si	20.25 22.10 23.30

## Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.	
Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis carlots, bulk delivered, per lb of briquet	10.30
Ton lots	11.90
Less ton lots	12.80

## Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$77.00 gross ton, freight allowed to normal trade area; Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$73.50. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 for each 0.50% Mn over 1%.	
---	--

## Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.	
96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

## Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.	
Carload, bulk	6.30
Ton lots	7.90
Less ton lots	8.80

## Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.	
25% Si	17.00
50% Si	11.30
75% Si	13.50
85% Si	14.65
90-95% Si	16.50

## Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.	
Cast Turnings Distilled	
Ton lots	\$2.05 \$2.95 \$3.75
Less ton lots	2.40 3.30 4.55

## Ferrocchrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered.	
(65-72% Cr, 2% max. Si)	
0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35
Briquets—Contract price, cents per pound of briquet, delivered, 60% chromium.	
Carload bulk	13.75
Ton lots	15.25
Less ton lots	16.15

## High-Nitrogen Ferrocchrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrocchrome price schedule. Add 5¢ for each additional 0.25% N.	
---	--

## S. M. Ferrocchrome

Contract price, cents per pound chromium contained, lump size, delivered.	
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.	
Carloads	21.60
Ton lots	23.75
Less ton lots	25.25
Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.	
Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

## Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.	
0.20% max. C	\$1.09
0.50% max. C	1.05
9.00% min. C	1.04

## Calcium-Silicon

Contract price per lb of alloy, lump, delivered.	
30-33% Ca, 60-65% Si, 3.00% max. Fe.	
Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

## Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered.	
16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

## CM5Z

Contract price, cents per pound of alloy, delivered.	
Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.	
Alloy 5: 60-58% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.	
Ton lots	19.75
Less ton lots	21.00

## V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.	
Ton lots	15.75¢
Less ton lots	17.00¢

## Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload packed	17.00¢
Ton lots to carload packed	18.00¢
Less ton lots	19.50¢

## SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.	
Ton lots	17.25
Less ton lots	18.50

## Other Ferroalloys

Alsiifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	7.65¢
Ton lots	9.05¢
Calcium molybdate, 45-50%, f.o.b. Langeloth, Pa., per pound contained Mo.	96¢
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	\$2.90
Less ton lots	2.95
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	\$1.13
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton	\$65.00
10 tons to less carload	75.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti.	\$1.28
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti.	\$1.40
Less ton lots	1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, carloads per net ton	\$160.00
Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	\$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.	
Openhearth	\$2.90
Crucible	3.00
High speed steel (Primus)	3.10
Molybdenum oxide briquets, f.o.b. Langeloth, Pa.; bags, f.o.b. Wash., Pa., per lb. contained Mo.	94¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk, lump	11.00¢
Ton lots, bulk, lump	11.50¢
Ton lots, packed, lump	11.75¢
Less ton lots, lump	12.25¢
Vanadium pentoxide, 88-92% V <sub>2</sub> O <sub>5</sub> , contract basis, per pound contained V <sub>2</sub> O <sub>5</sub>	\$1.20
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.	
Carload, bulk	6.60¢
Boron Agents	
Contract prices, per lb of alloy, del.	
Borosi, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	\$4.25
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y.; freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.625¢
Ferroboration, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots	\$1.30
F.o.b. Wash., Pa.; 100 lb and over	
10 to 14% B	.75
14 to 19% B	1.20
19% min. B	1.50
Grainal, f.o.b. Bridgeville, Pa. freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Manganese-Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.	
Ton lots	\$1.67
Less ton lots	1.79
Nickel-Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	\$1.80
Silicaz, contract basis, delivered	
Ton lots	45.00¢



**Metal  
Stampings**

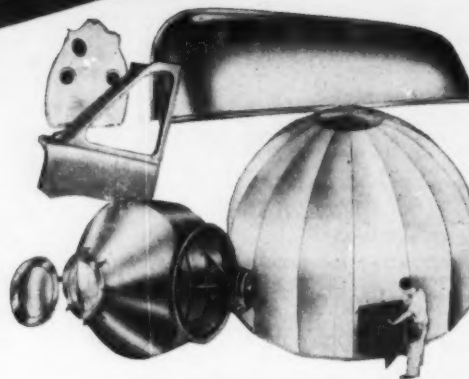
★  
**Heavy  
Weldments**

★  
**Pressed  
Steel Shapes**

**BRANDT**  
BALTIMORE



**CHARLES T. BRANDT, INC.**  
1700 Ridgely St., Baltimore 30, Md.



DISCOVER why a wide range of industries—automotive, refrigeration, electrical, aircraft, U. S. Government, etc.—call Brandt for a complete job.

**WRITE FOR FILE NO. 501**

★

Strategically located near steel mills, major rail, water and highway transportation.

**Iron Age** *Introduces*

*Continued from Page 21*

Irving A. Duffy has been elected a vice-president and member of the policy committee of FORD MOTOR Co., Dearborn. Prior to coming to Ford in February 1949 as purchasing director, Mr. Duffy had served as assistant to the vice-president at International Harvester Co., Chicago.



**WILLIAM A. DELGER**, vice-president in charge of manufacturing, DeVilbiss Co.

William A. Delger, former plant manager of the DEVILBISS CO., Toledo, has become vice-president in charge of manufacturing. Don J. Peeps, chief engineer, was advanced to vice-president in charge of engineering. John M. Robinson, treasurer, was elected vice-president and treasurer. Frank R. Pitt, the company's legal counsel, was named secretary, and R. Miles Booth, member of the treasurer's staff, was appointed assistant secretary and assistant treasurer.

Laurence Ripich has been elected to the board of directors as secretary of the AMERICAN TANK & FABRICATING CO., Cleveland, and K. J. Humberstone, chief metallurgist, as a director.

George C. Connor has been appointed general sales manager for the Photoflash Div. of SYLVANIA ELECTRIC PRODUCTS, INC., Salem, Mass., and Alfred C. Viebranz has been named general sales manager of the Electronics Div., succeeding Mr.



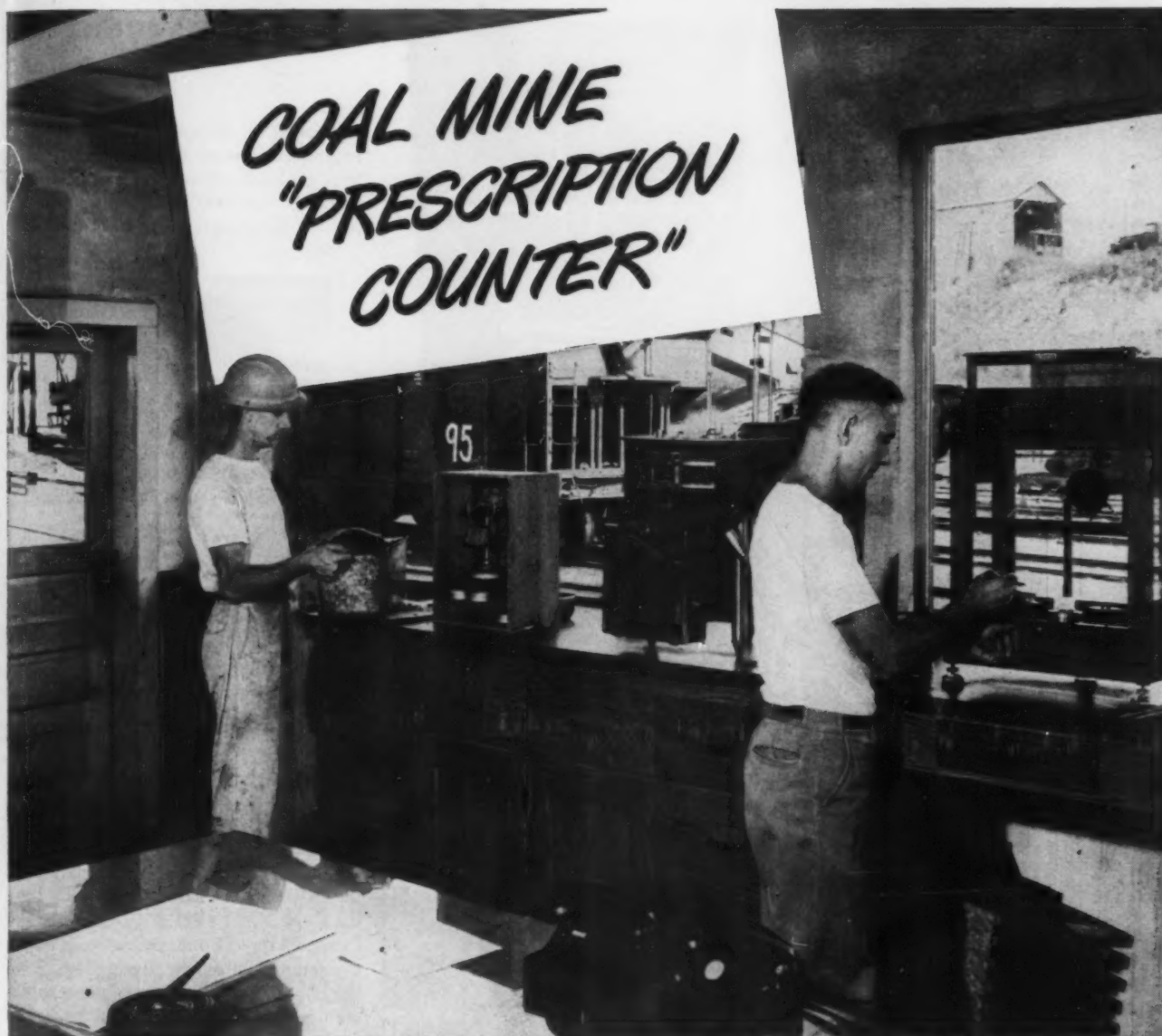


Photo courtesy of The United Electric Coal Companies

**Today many coal buyers** "write their own prescriptions."

In ordering coal from the mines, they specify not only grade and size, but also carbon content, sulphur content, volatile matter, and *heat* value as well—in order to get exactly the kind that burns most efficiently in their equipment.

Quality control laboratories, like the one pictured above, make this possible. They are located right at the preparation plants of modern, mechanized coal mines. Here technicians check bulk samples—weighing, burning and analyzing each one. Their "lab" reports enable preparation plant superintendents to deliver the right coal to each customer.

Such scientific steps are only part of modern coal mining, which also includes million-dollar preparation plants, electric-powered shuttle cars, and high-speed conveyor belts, *plus* machines that drill, cut, dig and load coal. All these are the result of a far-sighted program of capital investment in mechanization that has made America's coal mines the safest, most efficient and productive in the world.

**Working conditions** in modern coal mines are far different in many ways than you may have thought. Today the miner scarcely touches pick or shovel. Indeed, he's a skilled operator of many specialized machines—like mobile power drills, cutters, loaders, shuttle cars, and high-speed conveyors. He works in clean, fresh air, too. In fact, *more* tons of fresh air are pumped into today's modern mines by giant fans each 24 hours, than tons of coal moved out. And for his work, the miner earns higher average hourly wages than are paid by any other major industry.

## BITUMINOUS COAL

BITUMINOUS COAL INSTITUTE

A DEPARTMENT OF NATIONAL COAL ASSOCIATION

WASHINGTON, D. C.

BITUMINOUS COAL . . . LIGHTS THE WAY . . . FUELS THE FIRES . . . POWERS THE PROGRESS OF AMERICA

January 12, 1950

95





**here's your  
one-stop source  
for fastening service**

*Slotted or Phillips head machine screws, wood screws, stove bolts, tapping screws, special headed products; nuts, rivets, chaplets, wire forms, screw machine products... in steel, stainless steel, copper, brass, bronze, everdur, nickel, nickel silver, monel, aluminum...*



1849

1950

**BLAKE &  
JOHNSON**  
*Fastenings*

**THE BLAKE & JOHNSON COMPANY, WATERVILLE 48, CONN.**

Please send me your new catalog containing full data on the complete line of Blake & Johnson fastenings.

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_

1A-1

## IRON AGE INTRODUCES

*Continued*

Connor. Mr. Connor joined the field engineering staff of the Radio Tube Div. in 1934. Mr. Viebranz was formerly government sales representative for the Electronics Div.



**HERBERT J. COOPER**, assistant to the general manager, Cooper Alloy Foundry Co.

Herbert J. Cooper has been elected assistant to the general manager of the COOPER ALLOY FOUNDRY CO., Hillside, N. J. Prior to joining the Cooper Alloy Foundry Co., Mr. Cooper was employed at the Bethlehem Steel Corp., and until his recent appointment he was engaged in practical research in the development of centrifugal casting and oxygen injection techniques.

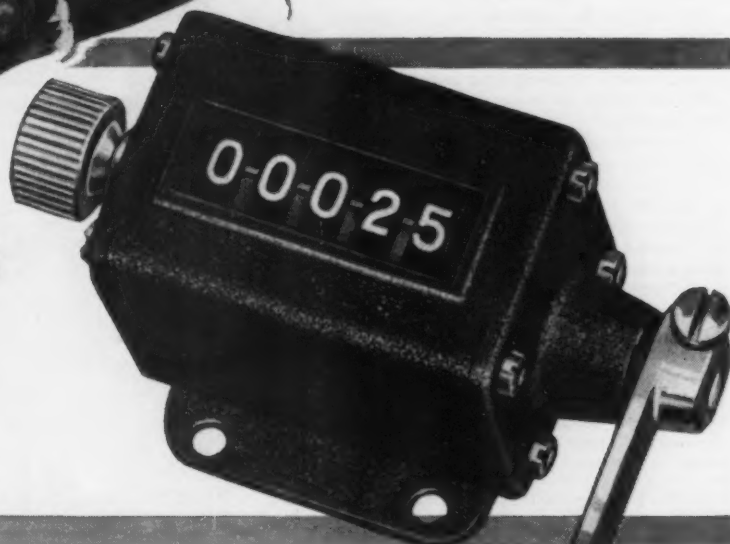
R. L. Shannon, formerly a district manager in the metal industries department, the DIVERSEY CORP., Chicago, has been named promotional manager. Mr. Shannon succeeds B. B. Button, who has been promoted to the position of special assistant to Mr. Noyes.

John W. Brittingham was elected a vice-president and a director of GRIF-FIN WHEEL CO., Chicago. Mr. Brittingham has been with the company since 1937 and has held the position of treasurer since 1947. Cedric P. Voll was elected to the newly created post of controller.

Oliver L. Earl has been elected president of the ACME ALUMINUM FOUNDRY CO., Chicago, to fill the vacancy caused by the death of Harry L. Ferguson early in 1949. Mr. Earl,



**Why does he  
Count his chickens  
...before they are  
"vaxed"?**



*"Now we've seen everything!"* Every time we say that, we can count on it that someone will figure out a new way to use counters. There was the drink-dispenser, the Iron Chinaman, the map-making machine, the fishing reel, the ship's sextant, the exercise table, the bowling-pin setter and countless others.

Then came the egg-grader. So it was only a matter of time 'til another

inventive mind combined a counter with a vaccinating device, to keep count of his birds as he needed them!

*But why all the figuring on how to use counters?* Because Veeder-Root Counters add a new usefulness to any product into which they are built as standard equipment . . . a new sales stimulant, a new profit-producer. Now, let's get together and see what counter-use we can figure out for you!

**Veeder-Root**

**COUNTERS**



**SMALL RESET COUNTER**

counts strokes, revolutions, pieces, operations, etc. Easily built into any type of product. Write for spec-sheet on this counter, and for Condensed Catalog.

**VEEDER-ROOT INC., HARTFORD 2, CONN.**  
In Canada: Veeder-Root of Canada, Ltd., 955 St. James Street, Montreal 3. In Great Britain: Veeder-Root Ltd., Kilspindie Rd., Dundee, Scotland.

# The New XACTLINE STRAIGHT LINE TEMPERATURE CONTROL

**For Use With  
Pyrometer Controllers**



**Anticipates  
Temperature Change  
Eliminates Overshoot  
and Undershoot**

Now with XACT-  
LINE Straight Line  
Temperature Control  
you can increase the efficiency of your Pyrometer  
Control Instruments (either

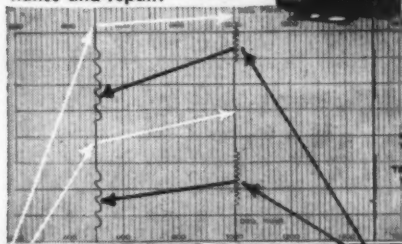
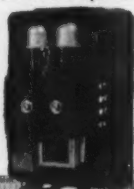
Millivoltmeter or Potentiometer Type) to an amazing degree. Now you can hold tolerances as close as  $1/5^{\circ}\text{F}$ . plus or minus and power "on-off" cycles as low as 3 seconds.

For XACTLINE, operating in the thermocouple circuit, ANTICIPATES the most minute heat variations on both heating and cooling cycles, thereby enabling your pyrometer controller to control far more closely than otherwise possible.

This Anticipation Factor means that XACTLINE causes the conventional pyrometer controller to respond to a millivoltage impulse up to 90% less than that normally required, (the controlling pyrometer functions only when the desired temperature range has already been exceeded).

XACTLINE is laboratory tested and adjusted . . . does not require readjustment or coordination with other controllers.

NO gears, cams, shafts, bearings or other rotating or sliding parts. Simple design eliminates usual maintenance and repair.



**Xactline in Circuit    Pyrometer Only**

**PRECISE CONTROL FOR . . . Tempering-Drawing . . . Iso-Thermal Quenching . . . Al and Mg Treatment . . . Accurate Heat Treating . . . Sintering . . . Metallic Baths . . . Plastic Molding . . . and other operations . . . Price complete F. O. B. Factory . . . **\$79.50****

Write for the new XACTLINE data folder today!

**GORDON  
SERVICE**

**CLAUD S. GORDON CO.**

Specialists for 33 Years in the Heat Treating  
and Temperature Control Field

Dept. 16 • 3000 South Wallace St., Chicago 16, Ill.  
Dept. 16 • 7018 Euclid Avenue • Cleveland 3, Ohio

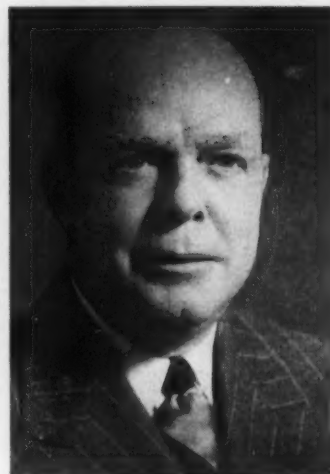
## IRON AGE INTRODUCES

*Continued*

who joined the company as vice-president and director, will be succeeded in those offices by **Harold Osborne**, who retains his post as secretary-treasurer. Mr. Earl was general sales manager of the Mullins Manufacturing Corp., Salem and Warren, Ohio, prior to joining the company.

**Robert F. Bourne** has been appointed manager of export sales for the mid-continent territory of the **COLORADO FUEL & IRON CORP.**, Denver. Mr. Bourne has been with CF&I since 1946 and has been in charge of the sale of cutting edges.

**J. E. Jacobs** has been appointed an assistant general manager of the Lackawanna plant of **Bethlehem Steel Co.**, Bethlehem. Mr. Jacobs was formerly assistant to the general manager and management's representative in charge of industrial relations and is succeeded in this position by **B. A. McDonald**. **Oliver W. Johnson** has



**J. E. JACOBS**, assistant general manager, Bethlehem Steel Co.

been named manager of sales, plate construction in the fabricated steel construction division. Mr. Johnson succeeds **Bruce P. McDaniel**, who has retired after more than 20 years with Bethlehem. **Harry B. Thorn** has retired as contracting engineer in fabricated steel construction.

**Anthony J. DeFino** has been named general manager of the Buffalo Div. of **FEDDERS-QUIGAN CORP.**, Buffalo. Mr. DeFino has held key positions in various phases of the company's sales and manufacturing activities.

**Woodrow W. Oliver** has been named assistant purchasing agent for the eastern district of **AMERICAN STEEL & WIRE CO.**, Cleveland. He will serve at Worcester as assistant to **T. M. Haddock**, eastern district purchasing agent.

**Herbert G. Kieswetter** has been named assistant general manager of the mechanical goods division of **UNITED STATES RUBBER CO.**, New York. Mr. Kieswetter was formerly vice-president and assistant general manager of United States Rubber Export Co., Ltd.



**EUGENE L. O'MEARA**, purchasing agent, Harbison-Walker Refractories Co.

**Eugene L. O'Meara** has been appointed purchasing agent of **HARBISON - WALKER REFRACTORIES CO.**, Pittsburgh. With Harbison-Walker since 1928, Mr. O'Meara has served for many years in both the sales and construction divisions of the company's engineering department.

**Rear Admiral Walter S. Macaulay** has been appointed assistant executive engineer in the Knolls Atomic Power Laboratory of **GENERAL ELECTRIC CO.**, Schenectady. **Dr. Albert W. Hull** has retired as assistant director of the GE Research Laboratory. However, Dr. Hull will continue to serve the laboratory as a consultant.

**Creed W. Fulton** has been elected a vice-president and named manager of the New York office of the **TRUNDLE ENGINEERING CO.**, Cleveland. He was formerly vice-president of **Samuel J. Creswell Iron Works**, Philadelphia. **Harry L. Wood**, vice-president since 1941, will head the Chicago office of the company.



named  
or the  
RICAN  
nd. He  
sistant  
district

been  
ger of  
on of  
CO.,  
as for-  
sistant  
States

ing  
cc-

n ap-  
ARBI-  
ORIES  
-Wal-  
a has  
h the  
of the  
ent.

caulay  
cutive  
Power  
ETRIC  
Hull  
or of  
How-  
serve

ted a  
er of  
NDLE  
l. He  
amuel  
lphia.  
since  
ce of

AGE

**WHY SO MANY**  
**when 2 will do?**



The extra wheels really won't get you anywhere. They just cause confusion.

Same way with alloy steels—surprising how many plants are discovering they can get along better using just two alloy steels, instead of four, five or more A.I.S.I. grades. With 2 Carpenter alloy steels you can get the physicals you need *plus* the advantages of Reduced Inventory, Low Cost Heat Treatment and Better Machining Time.

This is the ideal set-up for making alloy steel parts like gears, shafts, pinions, cams, etc.

For the facts showing how 2 alloy grades can handle most of your maintenance and production jobs, write for a copy of Carpenter's unusual booklet called "2 Steels". It will give you complete data on mechanical properties, heat treatment, stock sizes and recommended uses.



**THE CARPENTER STEEL COMPANY • 121 W. Bern Street, Reading, Pennsylvania**



**Only Carpenter Gives You This Way to Replace Many A. I. S. I. Grades With Just 2 Alloy Steels**

January 12, 1950

# NEW BAKER FORK TRUCK

MODEL FT

**Costs less to buy—Does more work per dollar because of its**

**100%  
Functional  
Design**

**CAPACITY**—3,000 and 4,000 pounds.

**WEIGHT**—with battery—6,600 and 7,500 pounds.

**WIDTH**—35 inches.

**TURNING**—Operates in 64 inch intersecting aisles with 36 inch forks. Outside turning radius 73 inches.

**SPARK ENCLOSED CONSTRUCTION**

— available at extra cost for safe intermittent operation in gas and dust laden surroundings.



**126 INCH  
TELESCOPING LIFT**  
64 in. single lift, 63 in. free lift, with 83 in. overall height. Low-pressure hydraulic system.

**GREATER VISIBILITY**

Due to off-center position of operator and design of dash panel and uprights.

**OPERATOR CONVENIENCE**

Comfortable padded seat and backrest. Entry from either side. Automotive type steering wheel. Control levers to right of wheel.

**UPRIGHT GUIDES**

Welded unit assembly. Minimum increase in overall height when tilting. Interchangeability of uprights permits highway truck or boxcar loading, and extremely high tiering, with the same truck.

**NO-PLUG CONTROLLER**

Drum type, direction selected by manual control, 5 speed foot-operated accelerator. Impossible to plug. Dead man control.

**SOFT-TOUCH BRAKES**

Air-cooled drum type, mechanical. Mounted on motor shaft. Dynamic braking in varying degree obtained by reversing controller and advancing accelerator.

**CUSHION TIRES**

Provide a softer ride, longer wear, high power efficiency and greater traction.

**WORM DRIVE AXLE**

Exclusive rugged and simple design for maximum efficiency and long life.

**BAKER-BUILT MOTORS**

Travel and auxiliary motors designed by Baker specifically for truck application.

**WIDE ANGLE STEER**

Heavy-duty, automotive type shock-proof steer. Knuckle-type axle with rubber-mounted longitudinal pivot provides compensation for uneven roadways.

**ALL-STEEL FRAME**

Heavy gauge, unit-welded with steel plate bumper counterweight for greater rigidity and strength.

**Learn How Little  
This Truck Costs!**

Write for full descriptive data and prices and see for yourself why the Baker FT costs less to buy and does more work per dollar because of its 100% functional design.

**BAKER INDUSTRIAL TRUCK DIVISION**

*of The Baker-Raulang Company*

1227 WEST 80th STREET • CLEVELAND 2, OHIO

**Baker INDUSTRIAL TRUCKS**

## IRON AGE INTRODUCES

*Continued*

E. A. Trask, former head of the San Francisco office of JOHN A. ROEBLING'S SONS CO., California, has assumed new duties as manager of sales of the company's Chicago corporation. He is succeeded in his former



E. A. TRASK, manager of sales, John A. Roebling's Sons Co.

position by G. C. Bukowsky. Mr. Trask joined the Roebling organization 25 years ago, starting as a warehouseman and splicer. Mr. Bukowsky was the former manager of the Portland branch.

## OBITUARIES

Charles O. Drayton, vice-president in charge of sales of the American Screw Co., Providence, died Dec. 19.

Richard H. Sarle, 52, structural designer for Stone and Webster Engineering Corp., New York, died Dec. 24.

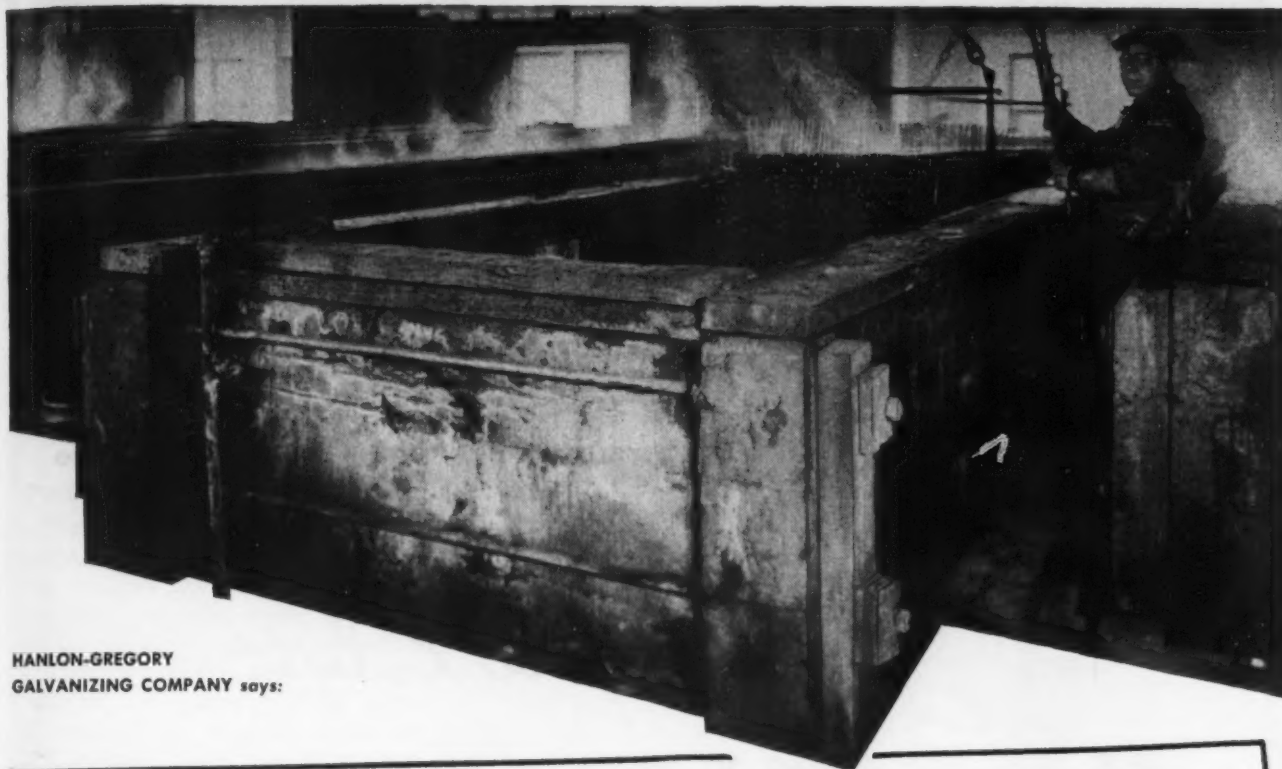
Bernard W. Doyle, 76, former mayor of Leominster, Mass., retired industrialist and founder of the Viscoloid Corp., died Dec. 27.

Harold J. Deutsch, vice-president and director of Monarch Aluminum Mfg. Co., Cleveland, died Dec. 24.

R. Edson Emery, retired chairman of the board of Jessop Steel Co., Washington, Pa., died Dec. 29.

John Tracy, 82, president of the Salmon Bay Foundry Co., Seattle, died recently.

*Resume Your Reading on Page 21*



HANLON-GREGORY  
GALVANIZING COMPANY says:

**"For 20 years we've used nothing but  
Monel Tie-rods on our pickling tanks!"**

The world's largest job galvanizing plant is operated by the  
Hanlon-Gregory Galvanizing Co., Pittsburgh, Pa.

25 years ago, this company gave Monel tie-rods a trial. As a result,  
tie-rods of Monel have become standard equipment, and for the  
last 20 years they have been used exclusively, together with  
corrosion-resistant Monel nuts and washers.



The Superintendent points out that the Monel tie-rods are so tough,  
so strong that the timber in the tanks can be very tightly bolted together.  
Leakage is minimized. Result: his tie-rods stay in good condition  
through many years of service, are able to keep his tanks tight longer.

For over 40 years, Monel has excelled in all types of pickling  
equipment. It is strong and ductile. It resists pickling acids better than  
any other commonly used material. It is easily welded.

And, of utmost importance in tie-rods, Monel is not attacked  
by the corrosion that eats away at an alloy with no visible warning of  
the reduction in strength.

\*Reg. U. S. Pat. Off.

**DESIGNERS and MANUFACTURERS!**  
Sand castings and precision castings of Monel,  
Nickel, Inconel\* and other Nickel alloys are avail-  
able from Inco's own foundry.



"PICK" MONEL for all types of pickling equipment. In addition  
to tie-rods, you can have crates, baskets, chain, hairpin hooks  
and other pieces fabricated to your design out of economical  
standard mill forms. For more information on Monel  
and Monel fabricators, write to our Ray Reddell.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall St., New York 5, N. Y.

**"MONEL" Pickling Equipment means Extra CAPACITY...Extra LIFE...Extra SAFETY**

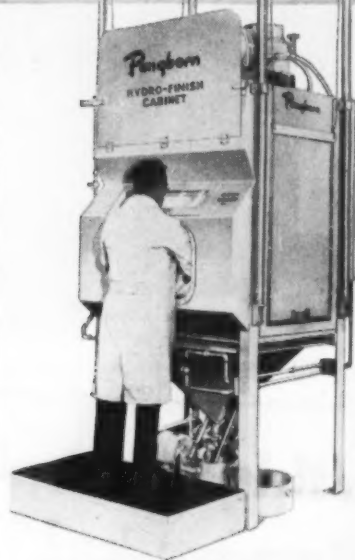
January 12, 1950

101



Improve Surface Finishes  
Increase Tool and Die Life

with  
**PANGBORN  
HYDRO-FINISH**



**What is Pangborn Hydro-Finish?**  
It's the new, versatile impact blasting process that uses a fine mesh abrasive suspended in water, yet holds tolerances of the work to .0001 inches.

**What Hydro-Finish can do for you**  
Pangborn Hydro-Finish can help you three ways, by improving surface finishes, by removing oxide scale, by lengthening tool and die life through proper maintenance.

**Hydro-Finish** eliminates many tedious finishing operations, reduces cost and time involved in buffing. It improves fatigue life of metal parts it finishes . . . produces a surface virtually free from directional grinding lines.

**PANGBORNITE**

The best abrasive for all liquid blasting needs.  
Available in many mesh sizes.



**Write today** for details about the new Pangborn Hydro-Finish Cabinet or Pangbornite. PANGBORN CORPORATION, 1201 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for all latest developments in Blast Cleaning and Dust Control Equipment.

**Pangborn**

**BLAST CLEANS CHEAPER**  
with the right equipment  
for every job



**Dear Customer**

by *Jack R. Night*

**MEMO TO THE EDITORS OF THIS JOURNAL:** The new large No. 4-E Pratt & Whitney Jig Borer has a vertical quill travel of 10 in.

The new large No. 4-E Pratt & Whitney Jig Borer has a vertical quill travel of 10 in.

The new large . . . . . get it, you guys, 10 inches is the figure.

**MEMO TO OUR THOUSANDS OF REGULAR READERS:** Just ignore the above paragraph. It all has to do with a new production ideas item in a recent issue when our brilliant brains department, bemused by circumstances of which we have no knowledge, mixed up their facts in a matter of important detail.

**"AND PAUSE REFRESHED"** Wallowing in a spate of inspirational institutional industrial advertisements which appear in the newspapers at this time of year, (are you still with me?) one from Jones & Laughlin Steel Corp. has hit us like a cool drink in August.

We recently set ourselves up here as an expert on things in the printing line. We hereby also recognize that we know a lot about headlines on advertisements. This ad we have in front of us, and it hasn't graced the pages of THE IRON AGE, is headed "The 'Good Old Days' Were Terrible." It develops a theme that is familiar

today, calling attention to the benefits of the American way of life. But it is dominated by a scratchboard drawing of a scene in an iron rolling mill over 50 years ago that suggests that those days were indeed terrible. And the figures in the copy prove it.

We have been bored with a lot of copy on this theme recently, but we can only say to R. T. Mossman, advertising manager at J & L, let us see more like this one.

**JOHNSONIAN SUBTLETIES:** Exactly what this Secretary of Defense is up to we don't know. He may be a noble statesman, or a politician on the make. But we do know that his staff is getting very free with the rubber stamp, and that could have serious consequences.

The editors became accustomed during the war to having countless rubber stamps mark their manuscripts, indicating no disapproval by Col. Who on the grounds of this or that. Strangely, those distinguishing marks are reappearing on the manuscripts for a number of feature articles the editors are getting these days. This might be an indication of an impending war, but we think instead that it just means that the censors, like the rich, are always with us.

# FREE

## PUBLICATIONS

Continued from Page 32

post rectangular die sets are described in 11-p. price list, DS-1249. *Lempco Products, Inc.* For more information, check No. 12 on the postcard on p. 33.

### Pedestal Grinders

The Roberts heavy duty power bench and pedestal grinders featuring oversize ball bearings greased for life, magnetic relay starting switch, dynamic balance, heavy insulated windings, and fully adjustable tool rests, in 3450 rpm, 60 cycle, 110 v-single phase or 220 v-triple phase capacities are illustrated in descriptive sheet. *Industrial Sales & Engineering Co.* For more information, check No. 13 on the postcard on p. 33.

### Drop Forgings

Merrill Brothers drop forgings such as clevis nuts, eye bolts, sleeve and coupling nuts, shackles, and turnbuckles are described along with the forging facilities of this manufacturer in 22-p. illustrated brochure. *Merrill Bros.* For more information, check No. 14 on the postcard on p. 33.

### Silent Chain Drives

The Whitney silent chain-drives available from stock are listed in a new catalog featuring selection tables that eliminate tedious calculations usually required in determining power transmission requirements. *Whitney Chain & Mfg. Co.* For more information, check No. 15 on the postcard on p. 33.

### Jig Borer

The P&W jig borer with 36 x 72-in. rectangular table is described in 4-p. catalog through use of photos, detail drawings, and specifications. *Pratt & Whitney.* For more information, check No. 16 on the postcard on p. 33.

Resume Your Reading on Page 33

# THE ONLY WAY YOU CAN BEAT FORGINGS AS A SALES FEATURE IS TO USE MORE FORGINGS



### A REFERENCE BOOK ON FORGINGS FOR ALL USERS OF METAL PARTS

60 pages of authoritative information on metal quality as developed in forgings formed through the use of closed impression dies. Forging production techniques are described and illustrated; economic advantages of forgings are presented from the viewpoint of top management, design engineers, metallurgists and production executives. Your copy is ready. Fill in and attach coupon below to your business letterhead.

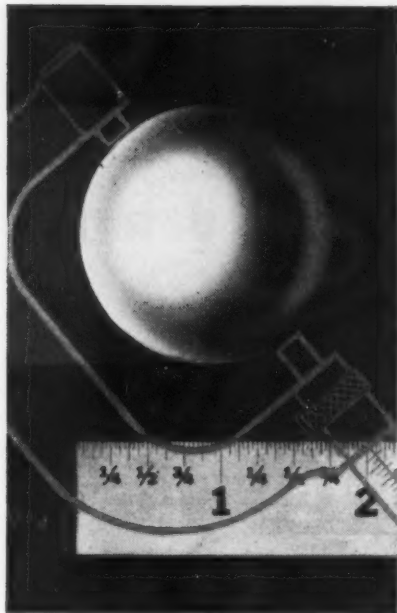
● What a forging *has*—can't be duplicated! No other method of fabricating parts utilizes fully the fiber-like flow line structure of wrought metals. Thus, forgings provide matchless capacity for the toughest work loads and fortify your product for better performance. Forgings forestall and reduce downtime due to failure of highly stressed parts; provide a factor of greater safety for men and machines. A recheck of every stressed part, as well as simple handles and levers, frequently reveals opportunities to improve a product, to reduce the cost of machining and finishing or to speed up assembly. Consult a forging engineer—only a forging engineer can inform you fully regarding the many quality advantages and cost-reducing possibilities that are obtainable with forgings.



Please send 60-page booklet entitled "Metal Quality—How Hot Working Improves Properties of Metals", 1949 Edition.

NAME \_\_\_\_\_  
POSITION \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_

**ONLY A BALL**  
has { **one dimension**  
**one surface**



### but oh—how important

Important not only in precision ball bearings, but also in the lot of other applications where Strom metal balls have been doing the job better. Strom has been in on a great many ball-application problems, and knows how important these two factors are for the best results.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.



**NEW**

### PRODUCTION IDEAS

*Continued from Page 36*

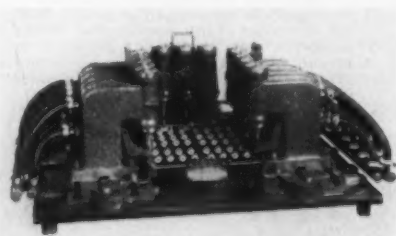
shaft and forces a small stream of oil into the chamber containing the gears and ball bearings. The vapor, splash, and condensation is sealed from the liquid being pumped by a standard friction seal in the low-



er portion of the drive mechanism. Pump is conventionally mounted by immersion  $12\frac{1}{4}$  in. into the liquid and held by a split type bracket around the  $2\frac{3}{8}$ -in. diam tubing. *Ruthman Machinery Co. For more information, check No. 29 on the postcard on p. 33.*

### Riveting Machines

A multiple head pneumatic riveting machine that allows selection of the proper peening effect for individual jobs through adjustment

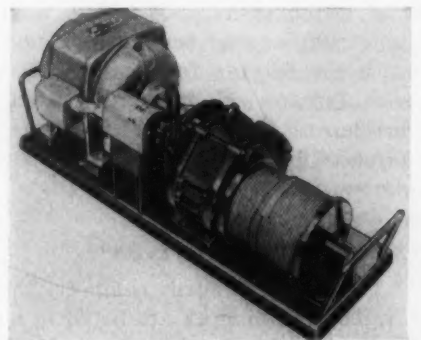


in air pressure and riveting time has been added to the Hill line of riveters. These special machines utilize standard heads that may be spaced as close as  $2\frac{3}{4}$  in. on cen-

ters. Air supply is handled through a single solenoid operated air valve controlled by a foot switch in conjunction with an adjustable timer that limits the time of the riveting cycle. A pressure reducing valve is also provided. Shown is a 13 head machine for assembling electric stove heating element frames, each head being provided with a pneumatic clamp to hold the part in the locating fixture. The position of the heads can be adjusted to accommodate various sizes of frames. *Hill Machine Co. For more information, check No. 30 on the postcard on p. 33.*

### Electric Winch

For mobile lifting and pulling power for materials handling jobs, the Stampco Tugger is a powerful, compact drum-and-cable winch, adaptable for on-the-spot use. It furnishes a line pull of from 500 to 1500 lb at speeds ranging from 55 to 220 fpm. Double reduction spur gears convert the output of a high torque, repulsion-induction motor to a constant speed and power ratio on the drum of the winch. The reducer is coupled to the motor direct and totally enclosed to per-



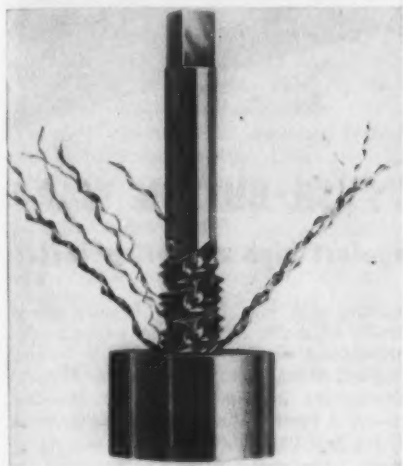
mit high gear efficiency and quiet operation while running in a continuous oil bath. A lever handle controls the mechanical brake and reversing switch on the motor. *St. Anthony Machine Products Co. For more information, check No. 31 on the postcard on p. 33.*

### Thread Forming Broach

The new Shearcutter thread forming rotary broach for forming machine screw size threads cuts threads by end pressure exerted by the cutting edge rather than by radial pressure alone. Chips are



fed out of the hole being threaded. The broaches are said to be practically unbreakable; require only half the power required for tapping; work equally well in most materials; do not bind or seize in the hole being threaded; and do not tear the material being cut. They have long life and may be resharpened many times on a standard tool



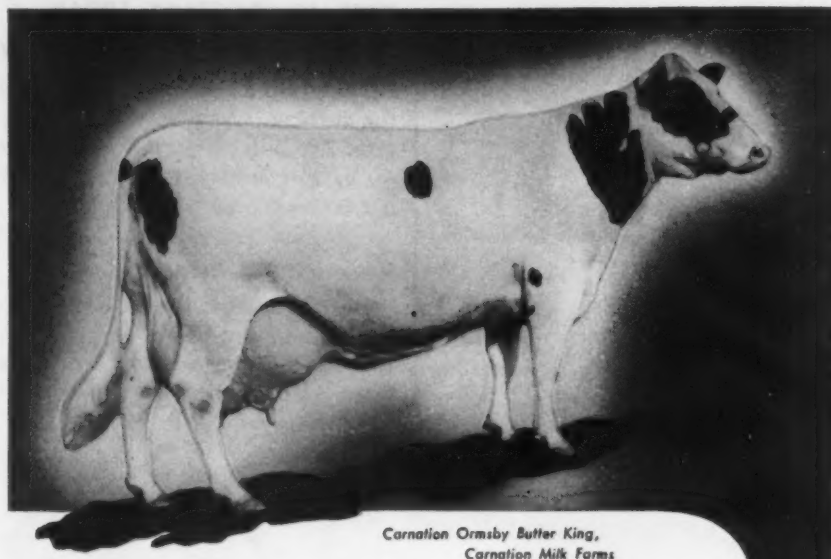
and cutter grinder. The broaches can be used in tapping machines, automatics, turret lathes, lathes, or any machine adapted for a tapping operation. Shearcut Tool Co. For more information, check No. 32 on the postcard on p. 33.

### Dial Micrometer

Permitting caliper of thicknesses up to  $\frac{1}{2}$  in. on sheet stock or fabricated pieces, the new Cady hand model dial micrometer is glass covered,  $2\frac{3}{4}$  in. in diam, and is graduated into thousandths of an inch. Standard anvil has  $\frac{9}{16}$  in.



diam. Special anvils with larger or smaller diameters and flat or spherical ends can be supplied when specified. The frame is cast aluminum, shaped to comfortably fit the hand. A lever is conveniently located for raising anvil for material insertion.



Carnation Ormsby Butter King,  
Carnation Milk Farms

## Just another cow?

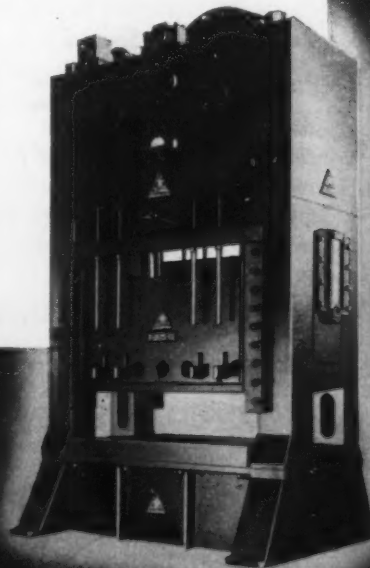
She may look like any other cow, but Carnation Ormsby Butter King holds the national record for butterfat production. That's what she was specially bred to accomplish. Though different presses may appear to be much alike, too, the fact is that a Clearing press generally sets production records that bring extra income to the user, because Clearing presses are designed and built for that special purpose.

There is plenty of evidence to prove we've succeeded. When you use a Clearing press, added profits result from a smaller number of rejects, from reduced loss of operating time for die repair or readjustment, from speedier operation, from quicker and smoother assembly of the parts later.

Let us tell you about Clearing performance. A wire, letter or phone call will bring you facts and figures.

## CLEARING PRESSES

THE WAY TO EFFICIENT  
MASS PRODUCTION



CLEARING MACHINE CORPORATION

6499 WEST 65TH STREET • CHICAGO 38 ILLINOIS

# PAGE WIRE

LOW CARBON  
HIGH CARBON  
STAINLESS  
SPECIAL ALLOY  
ARMCO IRON

ROUND  
FLAT  
OR  
SHAPED

**You draw the Shape  
—Page can draw the Wire—**

—the way you want it for your production—whether it's ALL of your product, or only a part.

Cross-sectional areas up to .250" square; widths to 3/4"; width-to-thickness ratio not exceeding 6 to 1.

**for Wire or  
Information about Wire—**

*Get in touch  
with Page!*

Monessen, Pa., Atlanta, Chicago,  
Denver, Detroit, Los Angeles, New York,  
Pittsburgh, Philadelphia, Portland,  
San Francisco, Bridgeport, Conn.

**PAGE STEEL AND WIRE DIVISION  
AMERICAN CHAIN & CABLE**

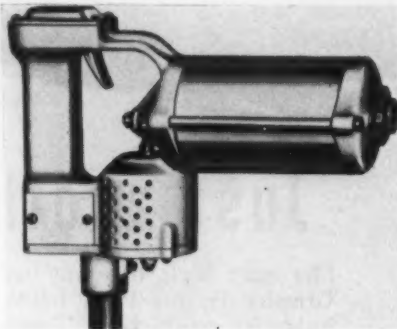
## NEW PRODUCTION IDEAS

*Continued*

An external adjustment is provided for zeroing. Anvil pressure is approx 7 to 9 lb per sq in. *E. J. Cady & Co. For more information, check No. 33 on the postcard on p. 33.*

### Electric Hammer

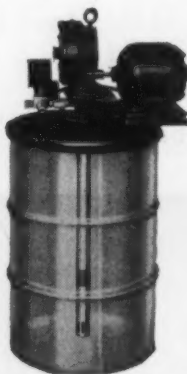
Designed to drill holes in concrete, rock, and brick, Syntron No. 10 portable electric hammers have 5/8-in. drilling capacity and are en-



tirely self-contained with the rectifying unit now incorporated in the handle casting. Use of light weight selenium rectifier units that fit into the hammer proper allows the operator to plug the hammer cord directly into the 110 v, ac power source. *Syntron Co. For more information, check No. 34 on the postcard on p. 33.*

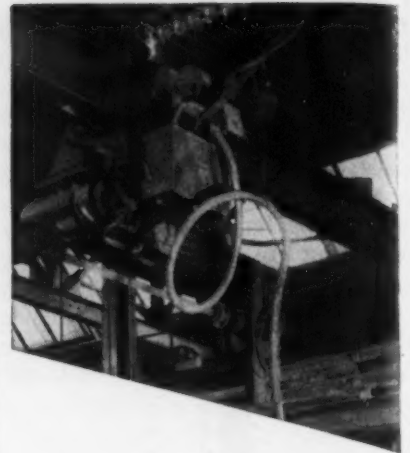
### Drum Pump

Fast, positive delivery of heavy, viscous or fluid lubricants from 55-gal barrels or 400-lb drums is accomplished with a Centro-Matic



electric motor operated drum pump used in conjunction with a centralized single line lubrication system. Pumps are time clock controlled and include, as standard equipment, control panel, pressure switch, and signal alarm. The panel can be mounted adjacent to the pump, or in any remote location. *Lincoln Engineering Co. For more information, check No. 35 on the postcard on p. 33.*

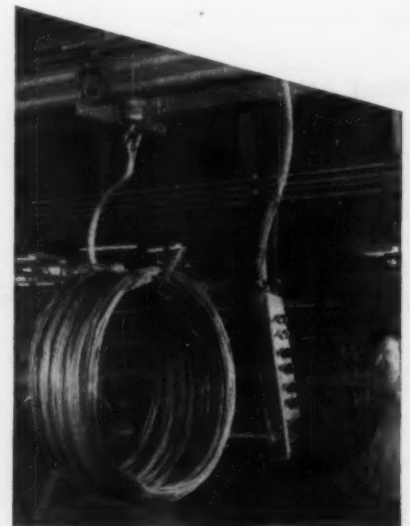
**Resume Your Reading on Page 37**



## "PUSH-BUTTON WAR" against high operating costs!

Lifting and moving wire from winding drums to the next operation was a costly proposition in this plant. Then a 1/2-ton, single I-Beam, motorized Reading Electric Crane was installed. Now the operator pushes a button—the Crane does the rest! That's real handling economy!

Better, lower-cost materials handling is never an "accident" with *Unit-Designed* Reading Cranes. Never mass produced, they are tailored to fit your job—at no extra engineering cost! Find out more about this unique method of crane construction. Call a Reading Engineer for information or installation recommendations, today.



**READING CHAIN & BLOCK CORPORATION**  
2101 ADAMS ST., READING, PA.  
Chain Hoists • Electric Hoists  
Overhead Traveling Cranes

# READING HOISTS



## FATIGUE CRACKS

Continued From Page 18

don are those you laugh at . . . the absurd, the whimsical, the goons and buffoons, the incongruous, the distended and distorted. This type of laugh is a sophisticated first cousin to the pratfall or the old-fashioned belly laugh.

The laugh the Bull of the Woods brings forth is a laugh of sympathy, a sweet laugh, a silent laugh that tickles the base of the spine. There's not supposed to be anything inherently funny in the Bull's clothes, his shop, or his cronies. If Mr. Cuddon could see the other Williams cartoons in the daily press, he would know that the spirit of the Bull and his friends lives, under various aliases, on the cattle range, in the home, and sometimes 30 years ago. If word balloons are an old technique, so is talk itself. You might say the Christmas tree was old-fashioned, but we wouldn't miss the laughter it brings forth from children when they first see it Christmas morning.

Our laugh with the Bull's friends is a relaxed laugh of familiarity with situations we've seen and talk we've heard. And if J. R. Williams ever adopts a "slick technique" or fills those speech balloons with witty repartee, we'll hit him over the head with our carpet slippers.

### Puzzler

When last week's Fact Book edition was ready for the mail, we decided to check to find how many more Fatigue Cracks readers were on the free list for having submitted correct answers to the Dec. 8 marble puzzle. In addition to those listed Dec. 22, here they are:

Norman A. Moberg, W. M. Kelly, Rebecca H. Smith, J. V. Mills, L. F. Graves, Robert Putnam, L. W. Myers, I. L. McGinnis, David B. Grimm, William B. Karst, C. W. Davis, H. W. Howells, J. M. Forbes, William R. Brown, John Fannon, C. R. Lehr, H. C. Wiedemann, Norman H. Eckler, Wallace M. Knight, W. M. Harris, J. S. Pugh, W. B. Boyd, Charles E. Heilman, Francis G. Stone, Ed Bronsil, George White, Ralph L. Cook, H. A. Pfanner, W. R. Johnson, J. M. Pickett, Chester M. Hushak, H. G. Reynolds, Robert E. Tolen, F. R. Ynicer.

M. V. Dreyspool told the correct time (8:01) on the Dec. 15 puzzler. And the following so far have used the same digit 8 times to equal 1000 (Dec. 29): Seymour L. Samet ( $1 \times 1111 - 111 = 1000$ ); Charles G. Heilman ( $[5555 - 555] \div 5 = 1000$  or any similar combination); J. V. Cricchi, who added 888, 88, 8, 8, and 8, which was the same way we figured it.

Mr. Samet writes that he bets we don't catch a scrap man on this one: Which would you rather have—a million dollars or one red cent doubled every day for one whole month?

Resume Your Reading on Page 19



## "Gad, Plunkett!... a Belly-Duster!"

Sights too low? — Range too short? — just enough to "dust" a few sales feathers off the midriff section of the market? — What are you doing about next year's sales? — Getting an edge on your competition? — Have you stopped beating your sales manager? — Are satisfied customers spreading your gospel? . . . NO? — Gad, friend . . . let's start NOW!

★ ★ ★

It seems as though sales fly faster and higher these days—harder to get a bead on them. Takes a good eye! You have to raise your sights—better quality merchandise, that is. And you have to be quicker on the draw—priced lower that is . . . And here's the trick that does both at the same time—it's pre-coated *Thomas Strip*! It maintains quality through its workability, its uniform gauge, its metallurgical rightness for your specific product and process, and its pre-coat unitized with the base steel in the special Thomas process. It lowers cost for it eliminates all but the two essential and profit-making steps of your process—fabrication and assembly.

But the best proof of this is Thomas Strip itself. Let our metallurgists study your product and your process and recommend the analysis to fit the case—and give it a trial run in your own plant. Check with us today!

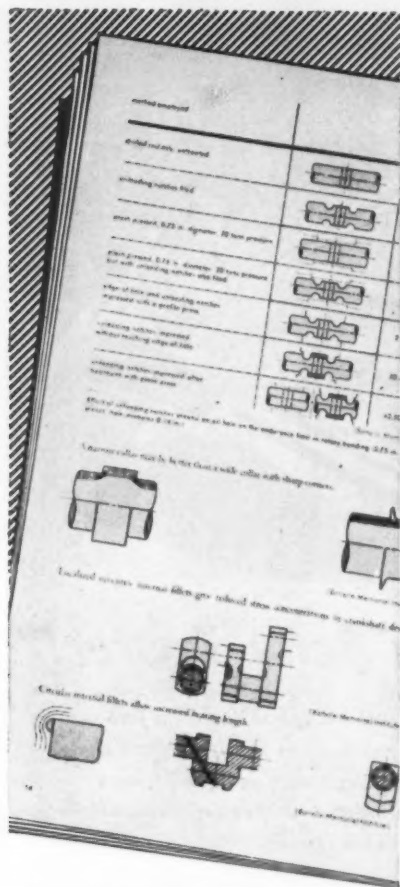


**THE THOMAS STEEL COMPANY**  
WARREN, OHIO  
Specialists in Cold Rolled Strip Steel

*Thomas Strip*  
SPEEDS PRODUCTION . . . CUTS COSTS

Electrocoated with Chromium, Nickel, Copper, Zinc and Brass • Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Alloy Strip Steel • Uncoated Strip Steel • Produced to Your Specifications.





## The Design Engineer can improve service life

Ingenious design, based upon the understanding of imposed stresses and their proper control, can increase the life of machinery. A 72 page booklet, free upon request, discusses the relation between design, the choice of steel, and its treatment. Send for it.

### Climax Molybdenum Company

500 Fifth Avenue • New York City



Please send your  
FREE BOOKLET  
3 KEYS TO SATISFACTION

Name \_\_\_\_\_

Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

IA-1

© F 23

# Dear Editor

## OCTOBER 1892 REFERENCE

On Sept. 28, 1892, a celebration was held at Bethlehem Steel Co. honoring Mr. John Fritz on his 70th birthday. The local paper at that time carried a complete story of this event, but did not show any photographs. We have, however, a photograph of the guests at this affair, but have no identification as to persons in this picture. Would you be so kind as to check your records to see if you could possibly find a similar photograph with the proper identification?

JOHN C. LONG

Manager of Publications

Bethlehem Steel Co.  
Bethlehem, Pa.

We have checked with the New York Public Library where our older bound volumes are kept. An article describing the celebration appeared in the October 6, 1892, issue. It was accompanied by a portrait of Mr. Fritz and the names and company affiliations of those attending the celebration. However, there was no group photograph.—Ed.

## HIGH CAPACITY FURNACE

In a recent issue there appeared in Newsfront, reference to the operation of a new highly productive open hearth furnace. The brief description mentioned the elimination of buckstays and the 21 ft door. Capacity was 71 tons with a pouring rate of approximately 8 tons per hr. However, no reference was made as to the name of the company operating the open hearths or the location of these furnaces. If this additional information is available in your office the writer would appreciate very much hearing from you.

R. N. SMITH, JR.

Reynold Alloys Co.  
Richmond, Va.

The 70-ton furnace which averages 8 tons per hr on an all cold charge is located in Japan. We have been asked to withhold further details pending action on patent applications.—Ed.

## SQUARE ROOT TEES

We will greatly appreciate any information or list of any mills which roll, or are in the position to hot roll bar size square root tees, in mild steel.

R. JASIN

Jasin Manufacturing  
South Haven, Mich.

As nearly as we are able to determine, no mills roll square root tees as a standard item. Any readers having information on this subject can write to Mr. Jasin, P. O. Box 164, at South Haven.—Ed.

## STATISTICAL DATA

Do you know where we could obtain statistics on production, inventories and new orders for the machine tool industry as a whole? We would like to have back figures covering as long a period as possible, and which can be kept up to date.

D. B. ELLSWORTH

B. Barret Griffith & Co., Inc.  
Colorado Springs, Colo.

THE IRON AGE Metal Industry Fact Book, released Jan. 5, 1950, will contain all of this type of information on machine tools and also various other industries.—Ed.

## PERMISSION TO COPY

YOUR STORY NEW ENGLAND FINANCING DEC. 15 ISSUE IS SWELL. MAY WE DUPLICATE SAME IN FACSIMILE WITH CREDIT TO IRON AGE? APPRECIATE YOUR WIRING REPLY.

WALLACE DICKSON

New England Council  
Permission granted.—Ed.

## SCISSORS MAKING

Having the project to start a scissors manufactory in Mexico, I would appreciate it if you could send me a copy of THE IRON AGE and some information about forging and stamping. Could you recommend some manufacturer of this type of machinery?

GUY TERREL DES CHENES

Mexico D. F.

We are mailing you a copy of THE IRON AGE. An article entitled "Precision Machining in Surgical Scissors Production," appeared in the April 27, 1933, issue and gives many details on scissors production. You will also be interested in the article entitled "Cold Forming Stainless Steel," which appeared in two parts in the issues of March 31 and April 7, 1949.—Ed.

## TOOL STEEL DIRECTORY

Please send me a copy of the directory of tool steels. As I am an instructor in the Western Electric tool and die training school, your book would be of great help to me.

WALTER C. RAUSCH

Western Electric Co.  
Speedway, Ind.

## GOLD STATISTICS

Have you or your proof readers gone new dealish in your interpretation of statistics. On p. 11 of the November 17 issue of THE IRON AGE you state that 85 pct gold at \$44. per oz is equivalent to \$37.50 per oz of contained gold. According to my way of figuring this is equivalent to \$51.76 per oz of contained gold.

GEORGE R. GOHR

Port Washington, N. Y.

Since your letter of December 5 indicates that you were among the few who caught the error in our golden Newsfront, we have decided to sell the whole scheme to Washington. Of course, you are quite right. The price is now \$45 per oz of fine gold.—Ed.



## MUNDT PERFORATED METALS

The few perforations illustrated are indicative of the wide variety of our line—we can perforate almost any size perforation in any kind of metal or material required. Send us your specifications.

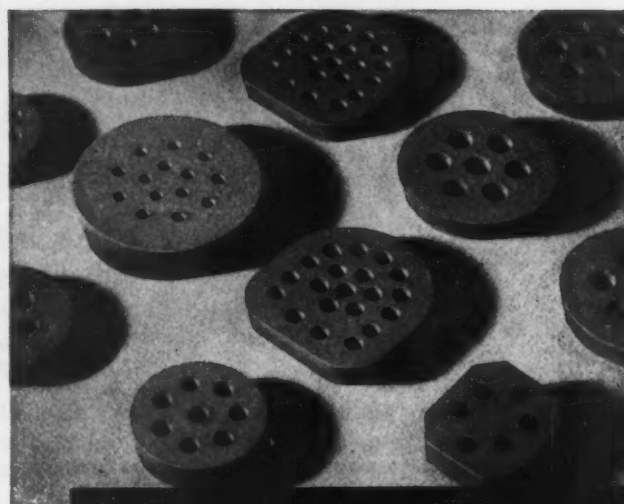
Sixty-seven years of manufacturing perforated metals for every conceivable purpose assure satisfaction.

Write for New Catalog of Patterns



TIN, STEEL, COPPER, ALUMINUM, BRONZE, BRASS, ZINC, ANY METAL, ANY PURPOSE

**CHARLES MUNDT & SONS**  
59 FAIRMOUNT AVE. JERSEY CITY, N. J.



## ALSiMAG

Reg. U. S. Pat. Off.

## STRAINER CORES

• CUSTOM MADE FOR  
YOUR REQUIREMENTS

**ACCURACY:** AlSiMag strainer cores are precision made to your specifications so that your rate of pour will be exactly as calculated. They are strong, hard, uniform, flat, rigid. They speed foundry production, increase the percentage of perfect, smooth castings.

**STRENGTH:** With old style strainer cores, castings are sometimes ruined because the rate of pour is altered by cutting or washing the holes in the soft core material. This cannot happen with AlSiMag strainer cores. AlSiMag core holes are accurate. The material is so hard that the hole cannot be enlarged even by reaming with a steel tool. AlSiMag strainer cores are also so strong that they withstand rough, fast handling.

**HEAT SHOCK:** Not affected by heat shock of molten metal temperatures normally encountered in foundries. Nothing to contaminate your castings.

### SAMPLES

For quotation send blue print or sample core now used and quantity desired. Competitively priced. Hand made test samples to your specifications at reasonable cost. Samples from sizes on hand sent free on request. When you use AlSiMag strainer cores you will see, as other foundries have, that they pay for themselves many times over.

## AMERICAN LAVA CORPORATION

48TH YEAR OF CERAMIC LEADERSHIP

501 KRUESI BUILDING, CHATTANOOGA 5, TENNESSEE

OFFICES: METROPOLITAN AREA: 671 Broad St., Newark, N. J., Mitchell 2-8159 • CHICAGO, 9 South Clinton St., Central 6-1721 • PHILADELPHIA, 1649 North Broad St., Stevenson 4-2823 • LOS ANGELES, 232 South Hill St., Mutual 9076 • NEW ENGLAND, 38-B Brattle St., Cambridge, Mass., Kirkland 7-4498 • ST. LOUIS, 1123 Washington Ave., Garfield 4959



## DRAVO Counterflo HEATERS

Figure all the costs—fuel, attention, lost production time while workers thaw out their hands—you'll find the salamander is one of the most expensive forms of heating you can use . . . and that the Dravo Counterflo method is definitely more economical. Dravo Heaters warm large open areas without duct work. Can provide tempered make-up air and year round ventilation. Oil or gas fired—readily switched from one to the other. Stainless steel combustion chamber. Up to 22,000 CFM air handling capacity per unit. Easily installed, 80-85% efficiency, AGA approved and UL listed. Ask for Bulletin FG-523-68

**DRAVO** CORPORATION

DRAVO BUILDING, PITTSBURGH 22, PA.

Sales Representatives in Principal Cities

Mfd. and Sold in Canada by Marine Industries, Ltd., Sorel, Quebec






**WEBB WIRE**



**NEEDLE**  
and  
**STAINLESS**




**THE WEBB WIRE WORKS**  
NEW BRUNSWICK, N. J.  
PHONE 2-4468-9



HAYWARD BUCKETS

Use this Electric Motor Clam Shell for rehandling bulk materials in Industrial Plants.

THE HAYWARD CO., 40-50 Church St., N. Y.



STANLEY STEEL

STEEL MAKERS SINCE 1871

HOT ROLLED   COLD ROLLED   SPECIAL CARBON   ALLOYS

THE STANLEY WORKS

NEW BRITAIN, CONN. • BRIDGEPORT, CONN. • HAMILTON, ONTARIO

THE CLEVELAND CO.

STEEL TOOL

Punches, Dies, Chisels, Rivet Sets

660 E. 82<sup>nd</sup> St. Cleveland, O.

If it's RIVETED you KNOW it's safe



PRESSES • FEEDS  
AUTOMATIC EQUIPMENT

The V&O Press Company

HUDSON, NEW YORK

WHY?

shop around for  
Cap Screws • Set Screws  
Milled Studs • Coupling Bolts  
when you know

WHO\*

has been making the finest  
for over half a century

\*WHO is...

WM. H. OTTMILLER CO.

YORK, PENNA.

Send for Free Literature.



GLOBAL LETTER

REVIEW OF WORLD MARKETS

Continued from Page 26

economic, protected, national steel industries can only have the effect of raising prices to a level which will eventually reduce consumption and prevent a rise in the standard of living.

### Nationalization Threatens To Engulf British Engineering Firms

London—Steelmakers with other business interests are meeting with a series of rebuffs in their efforts to segregate their activities and keep them outside the steel nationalization bill.

G. R. Strauss, Minister of Supply, said late in 1948 that he would consider sympathetically proposals for excluding from the take-over activities unrelated to iron and steel production "if it can be shown that the two parts are independent of each other, that each will be a viable unit and that there are good economic reasons for separation."

#### Says No Mandate Given

Dorman, Long & Co., the Middlesbrough iron and steel makers, who have extensive engineering, bridge-building and structural-steel interests, hoped to "hive off" these activities. The government refused to agree. Chairman of Dorman, Long, Sir Ellis Hunter, is also president of the British Iron and Steel Federation. He describes the government's refusal to agree to the segregation of the company's engineering interests as an attitude "completely at variance with earlier declarations of policy and clearly prompted by a desire to extend public ownership beyond the iron and steel industry into fields for which no mandate was ever sought at the last election."

The company's discussions with the Minister revealed that the government's refusal to permit segregation of its engineering interests was inspired by a desire to acquire the company's substantial share of the structural engineering industry without any mandate.

#### Cabinet Backing Reported

Now a similar decision is reported in connection with an application of the South Durham Steel and Iron Co. to segregate its steelmaking activities, which include structural engineering.

The Minister's unwillingness to regard these

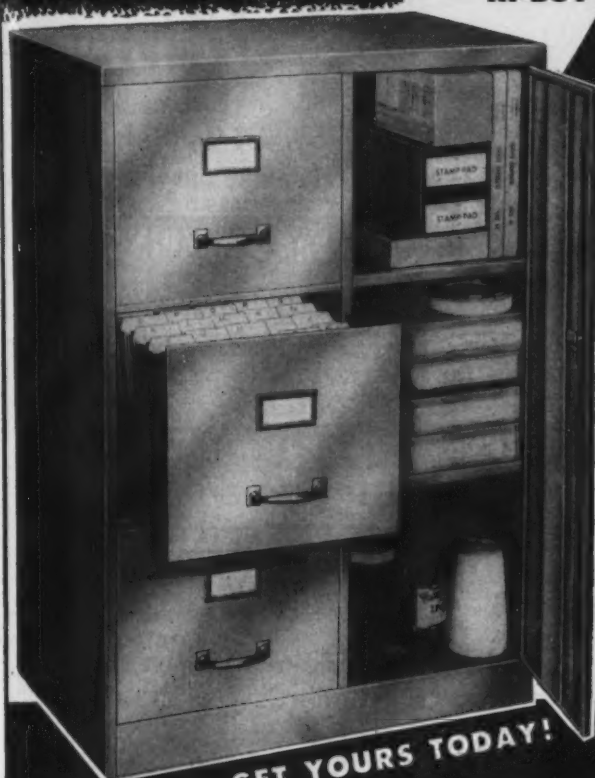


**THE BIGGEST IDEA IN  
OFFICE EQUIPMENT!**  
designed for you, and you!

**Steelmaster**  
HI-BOY

# TWO-ALL-IN-ONE

**THE COMPLETE JR. CORRESPONDENCE  
& SAFETY STORAGE CABINET-IN-ONE**  
**FILE IT.. STORE IT .. IN-ONE-UNIT!**



**GET YOURS TODAY!**

## • CORRESPONDENCE SECTION

3 full-width letter drawers—Instant positive compressor— speed ball bearings — new nickeled hardware.

## • SAFETY STORAGE SECTION

3 spacious storage shelves—outside door with lock and key. Made of heavy gauge furniture steel.

**A HEAVYWEIGHT  
lifetime service  
high-quality unit.**

**AMAZINGLY LOW PRICED!**  
ONLY

**39<sup>95</sup>**  
2A  
LETTER  
2C  
LEGAL  
\$42.50

PRICES HIGHER ON  
WEST COAST

No.	DIMENSIONS	Ship.Wt.
2A	27"wx40"h x 16"d	100 lbs.
2C	30"wx40"h x 16"d	106 lbs.

Available in Futura Grey  
and Steelmaster Green.

For locks on letter drawers, add  
\$2. per drawer.

**ON SALE AT YOUR STATIONER  
AND OFFICE FURNITURE DEALER.**

**ART STEEL SALES CORP.**  
**170 WEST 233 ST., NEW YORK 63, N.Y.**



**Don't Tell  
a Soul!**

We're going to let you in on a secret—a good, little money-making idea. You'd be absolutely amazed at the amount we save by doing repeat business with our customers. And, since we like to save money just as well as the next man — **WE MAKE IT A POINT TO SUPPLY OUR CUSTOMERS WITH GEARS THAT ARE SURE TO MEET THEIR STANDARDS OF QUALITY.** Best of all, our customers also save time and money by putting their gear problems on our shoulders and making us responsible for seeing that they get just the right gear for the job.

**THE EARLE GEAR & MACHINE CO., 4707  
Stenton Ave., Philadelphia 44, Pa.  
Sales Offices: New York City; Youngs-  
town, Ohio.**

**EARLE GEARS**

It's good business to do business with EARLE

*An authoritative reference on all phases of*

## PLANNING, CONTROL, DESIGN TOOLING and OPERATIONS

*in the mechanical manufacturing industries*

**T**HIS monumental reference volume brings you the latest in design, fabrication, maintenance, safety and economic use of tools and machinery. It covers the complete manufacturing operation; everything from product design and cost estimating, through the economical selection of machines, processes and tools, to the analysis and improvement of set-ups and operations. Checked and double-checked by a hand-picked group of experts to insure accuracy from cover to cover.



## TOOL ENGINEERS HANDBOOK

By the American Society of Tool Engineers  
Frank W. Wilson, Editor-in-Chief

**2150 pages • over 1500 illustrations • hundreds of tables,  
charts, diagrams, symbols, equations • easy payment plan**

- All important new techniques and processes covered
- Conventional tables of feeds, speeds and cuts modernized
- Provides the most complete theory on cutting forces and machinability available
- Includes data drawn from the private files of over 18,000 A.S.T.E. members

**-----FREE TRIAL—EASY TERMS-----**

McGraw-Hill Book Co.  
330 W. 42nd St., N.Y.C. 18, N.Y.

Send me the A.S.T.E.'s TOOL ENGINEERS HANDBOOK for 10 days' examination on approval. In 10 days I will remit \$3.00, and \$3.00 monthly until \$15.00 is paid or return the book postpaid. (We pay for delivery if you remit first payment with this coupon; same return privilege.)

Name .....

Address .....

City.....Zone.... State.....

Company .....

Position..... 1R-1-12-50

This offer applies to U. S. only

**COPPER—BRASS—BRONZE**  
**PERFORATED**  
 TO YOUR REQUIREMENTS  
 SEND US YOUR DRAWINGS FOR PRICE  
**PERFORATED METALS**  
 FOR ALL INDUSTRIAL USES  
 ALL SIZE AND SHAPE HOLES—ALL METALS  
 ARCHITECTURAL GRILLES  
**DIAMOND MFG. CO.**  
 BOX 28, Write for Catalog 35 WYOMING, PA.

**Cut Costs Quick . . .**  
 with the **TABOR-BRASIVE**  
**CUT-OFF MACHINE**



Save time, money, labor in cutting gates and risers from castings of manganese bronze, aluminum bronze, nickel, monel and other non-ferrous alloys, as well as alloy steel. Built in several sizes and types.

**THE TABOR MANUFACTURING COMPANY**  
 6225 Tacony Street, Philadelphia, Penna.  
 TABOR FOUNDRY Moulding MACHINES TAYLOR-NEUBOLD COLD SAWS

**NEED WASHERS?**  
**Call on WHITEHEAD!**

In Whitehead's large assortment of washer dies, you may find the particular die you require. Send your blue-print for an estimate.



**WHITEHEAD STAMPING CO.**  
 EST. 1903

1669 W. LAFAYETTE BLVD., DETROIT 16, MICH.

**CHICAGO**

**STEEL PRESS BRAKES and**  
**HAND and POWER BENDING BRAKES**



**CRAFTSMEN IN**  
**DIES—FORMING & PUNCHING**  
**MANUFACTURERS OF**  
**DOUBLE FOLDER BRAKES**  
**SPECIAL BENDING BRAKES**  
**OF ALL KINDS**  
**MULTIPLE PUNCHES**

**DREIS & KRUMP MFG. CO.**  
 7430 LOOMIS BLVD • CHICAGO 36, ILLINOIS

**Over 20 years**  
**Experience**

**DIES and**  
**STAMPINGS**

**BUS and**  
**TRAILER PARTS**

• Send Us Your Blue Prints and Specifications

**THE HP AND DIE and STAMPING CO**  
 13943 TRISKETT ROAD • CLEVELAND 11, OHIO

PRODUCERS OF  
*Hot Rolled*

**Small Merchant BARS - Bar Size SHAPES**

**BOIARDI STEEL**  
 CORPORATION  
 300 Lower Market St. Milton, Pennsylvania

**OHIO LOCOMOTIVE CRANES**

25 TO 40 TON CAPACITY

GASOLINE • DIESEL  
 ELECTRIC • STEAM

**THE OHIO LOCOMOTIVE CRANE CO**  
 BUCYRUS, OHIO



## GLOBAL LETTER

*Continued*

two cases as coming within his promise to sanction "hiving off" plans which were economically sound is believed to have been backed by the Cabinet. This would mean that the government regards overseas bridge-building, for instance, as coming within the scope of a domestic nationalization policy originally announced as covering iron and steel manufacture.

### Government Competition Seen

The implication of these decisions is felt in the industry to be that the government is definitely out to include structural engineering in the scope of iron and steel nationalization. Hitherto, it has been felt that if conditions for "hiving off" were complied with, the government would be willing to release non-steel-making activities. These two rejections, however, give a new emphasis to the government's intentions in this respect.

In the case of the South Durham Co., if nationalization goes through and control passes to the government, the State will be engaged in competition with free enterprise in this country and in world markets, not only in the production of steel materials, but also in the sale of engineering products.

*Resume Your Reading on Page 27*





## "Perfect perforating"

SAYS ACCURATE AGGIE

When it comes to perforating—metal, masonite, paper, or any other material, check with Accurate Perforating Company. Accurate offers you a wide selection of perforating dies, quick and dependable service, best of all a price that's hard to beat. For complete information, write today for your free catalog on Accurate perforated materials.

ACCURATE PERFORATING COMPANY DEPT. A1  
1101 S. KEDZIE • CHICAGO 12, ILLINOIS

## STEEL FORGINGS

UPSET, DROP and COIN PRESSED  
ANY ANALYSIS—ANY QUANTITY

Send us your blue prints for prices

ROCKFORD DROP FORGE CO.

2030 9th St.  
ROCKFORD, ILL.



Cutting Off  
Machines for  
Sawing All Kinds  
of Metals

THE ESPEN-LUCAS MACHINE WORKS  
FRONT AND GIRARD AVE., PHILADELPHIA, PENNA



## SILVERY

A Blast Furnace Product  
made from Only Virgin Ores

THE JACKSON IRON & STEEL CO. • JACKSON, OHIO

## FORGINGS

Hammered—Upset—Pressed—Extruded—Both Steel and Non-Ferrous Metals. "Large and Small—We Forge Them All!" on Hammers from 2000 lbs. to 35,000 lbs. Upsetters from 4" to 9" and Hydraulic and Mechanical Forging Presses. Modern Heat Treating Department.

THE CANTON DROP FORGING & MFG. CO.  
CANTON, OHIO



## It pays to do business in New York State!

New York State wholesalers do more business than those of any other state—190% more business, according to the latest census, than the next highest state; and 26% of the nation's total wholesale business! For more facts, write: N. Y. State Dept. of Commerce, Room 375, 112 State St., Albany 7, N. Y.

BOILER ENGINEERING  
AND SUPPLY CO. INC.

## TUBE & PIPE BENDING

4 INCH  
MAXIMUM DIA. PRECISION PRICES  
SUBMITTED

STEEL PLATE FABRICATION  
BOILERS HEATERS TANKS  
STACKS AND OTHER PLATE WORK

PHOENIXVILLE PENNA

## METAL STAMPINGS • WIRE FORMS

Just a few of the more  
than 7000 catalog items  
we manufacture.

What do YOU need?

EASTERN TOOL & MFG. CO.

General Office: BELLEVILLE 9, N. J.



Upsetting & Forg. Machs., National High Duty, guided overarm heading slide, suspended slides, 1", 1½", 2", 3", 4", 5"  
 Ajax & Acme Upsetting & Forg. Machs., not suspended slides, ¾", 1", 1½", 2½", 3"  
 W. W. Bulldozers, #22, #4, #24, #5, #8  
 Drop Hammers, 800# to 2500#  
 Hazel Air Forg. Hammer, #6B, Cap. 7" sq.  
 Bradley Hammers, Cushioned Helve, Upright & Compact  
 Trimming Presses, #59¼ Toledo, Tie Rod, 440-tons; other trimmers 55 to 200-ton  
 Bar Shears, Open & Guillotine, ¾" to 7" Rd.  
 Minster 88-ton O.B.I. Press  
 Minster 88-ton S.S. Press, 16" stroke  
 Solid Back Presses, 20 to 100-ton  
 #94-A Toledo S.S. Double Crank, Tie Rod Press; bolster 40x36"  
 Bliss Knuckle Joint Press, 250-ton  
 Thomas Beam Punch, Ram 32x38"; table 27x46", 300-ton  
 Cleveland EF Sgl. End Punch, 48" throat, 1¼" thru 1"  
 Single & Double End Punches, various throat depths and caps.  
 L. & A. Multiple Punch, 8', 150-ton  
 L. & A. Multiple Punch, 10', 600-ton  
 Ryerson Serpentine Throatless Shear, ½"  
 #416-C Niagara Circle & Slitting Shear, ¼"  
 Bending Rolls, 8', ¾"  
 Bertsch Straightening Roll, 1"x68"  
 Ryerson Friction Saws, #0, #1 & #3  
 Landis Threading Machine, 1", 2-Sp. lead screw, Lanco Hds., M.D., single up to 4"  
**BOLT, NUT AND RIVET MACHINERY, COLD HEADERS, COLD BOLT TRIMMERS, THREAD ROLLERS, SLOTTERS, HOT HEADERS AND TRIMMERS, COLD AND HOT PUNCH NUT MACHINES, POINTERS, THREADERS, WOOD SCREW EQUIPMENT**  
 Diamond Face Grinder, Segment Wheel 36", Table 84"x24", Hydraulic operated  
 Landis Motor Driven Pipe Threader, 8"  
 American Wheelabrator, 36x42  
 Southwark 400-ton Wheel Press

**DONAHUE STEEL PRODUCTS CO.**  
 1913 W. 74th Street, Chicago 36, Ill.

SALE BY  
**PUBLIC AUCTION**  
 OF THE ASSETS OF  
**THE OHIO TOOL CO.**  
 CLEVELAND, OHIO  
**INDEFINITELY POSTPONED**

**ROSEN & COMPANY • CLEVELAND, OHIO**

**ROLLING MILLS and EQUIPMENT**

FRANK B. FOSTER, INC.  
 2217 Oliver Building, Pittsburgh 22, Pa.  
 Cable Address: "FOSTER" Pittsburgh

## THE CLEARING HOUSE

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

**Business prospects for 1950 make Newark dealers optimistic**

**Auction sale for secret plant planned in New Jersey**

**Detroit dealers hope for continuation of present activity**

### Newark Dealers Report 1949 Sales Down, Future Optimistic

Newark — With 1949 overall business reported to be from 25 to 40 pct off compared with the previous year, there is still a decided feeling of optimism being expressed by dealers in the Newark area.

Most dealers experienced a decided spurt of activity during December. This activity was reported to be from 40 to 100 pct better than July business and indications are that this activity will continue. Judging from orders they now have, orders promised, and the number of live inquiries, Newark dealers expect that the first half of 1950 will be profitable.

The more optimistic dealers repeatedly point out that the only reason for their activity is the fact that they are continually out hustling for business in a manner reminiscent of the pre-war days.

### Screened Buyers to Attend "Behind Curtain" Auction Sale

Newark—An auction sale with a decidedly new twist is planned in this city under the direction of Asset Realization Co., Newark. This sale is classified as strictly "a private sale by invitation only." The machines to be disposed of are installed in a plant that is doing highly secret Government work. All prospective buyers or their representatives are being screened carefully before being permitted into the plant. The name and location of the plant, for security reasons, is not being publicized, but as prospective buyers

are approved for entry into the plant they are informed of the location. Persons wanting to inspect the machines fill out application forms in duplicate and forward them to the Asset Realization Co. Approved United States citizens receive registration cards permitting entrance to the plants over specified week-ends. The first inspection period is over the week-end starting Saturday, Jan. 14, 1950.

### Detroit Dealers Hopeful For Active Business in 1950

Detroit—Dealers in this area are entering the year 1950 in an optimistic frame of mind although the reported pickup in activity during recent weeks is not yet an across-the-board phenomenon. Some segments of the industry have reported a pickup in inquiries during the past month from small shops. Some of these requests are from new companies just starting in business.

A survey of local dealers indicates that with few exceptions Detroit establishments in used, rebuilt, and surplus machinery will show a loss of volume for 1949 as compared with the previous year. Many of the declines appear to be in the range of 15 to 30 pct.

The outlook at the present time

Turn to Page 118

#### MDNA CHAPTER MEETINGS

CHAPTER	DATE	TIME	PLACE
Detroit	Tues. Jan. 10	7:00 p.m.	Brown Co.
Chicago	Thurs. Jan. 19	6:30 p.m.	Steak House
Philadelphia	Tues. Jan. 24	6:30 p.m.	Warwick
New York	Mon. Jan. 30	6:30 p.m.	Cavanaugh's
Los Angeles	Tues. Jan. 31	6:30 p.m.	Elks Club